Western Route Strategic Plan

Version 8.0: Delivery Plan submission

March 2019

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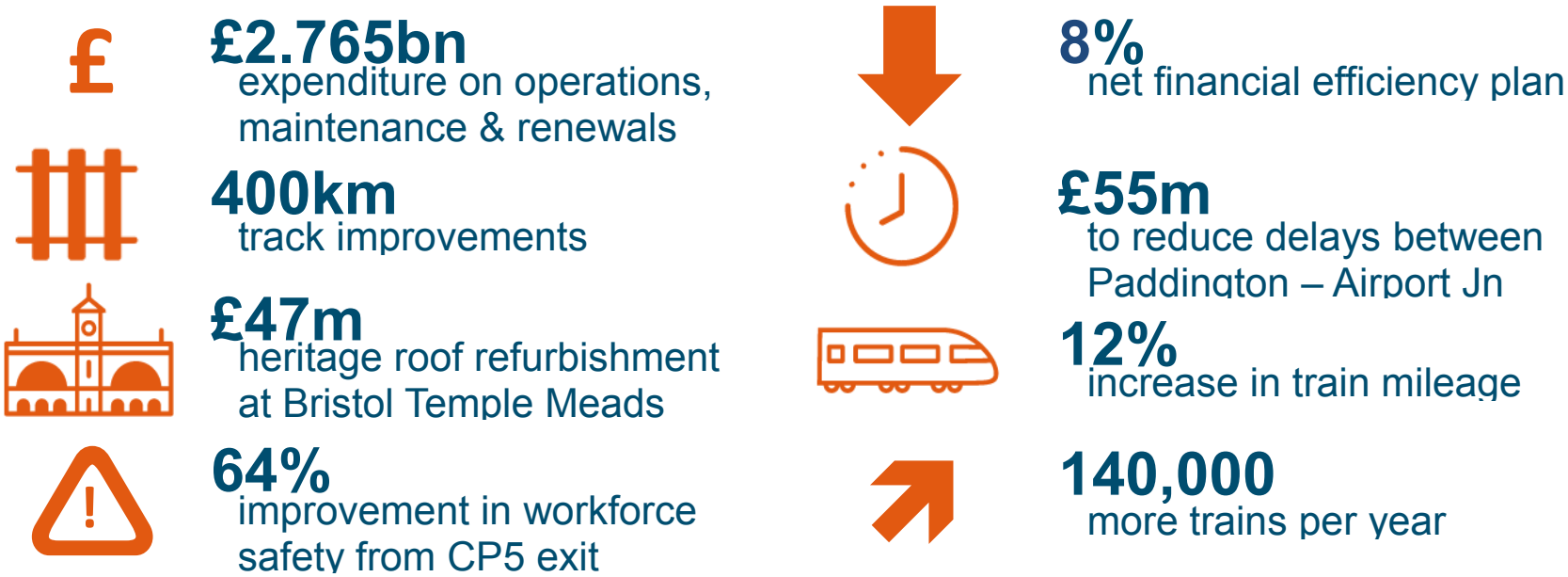
1. Foreword and summary

The Great Western Mainline has undergone its most significant upgrade since it was built by Brunel over 175 years ago. Our Control Period 6 (CP6) plan, enabled by the significant investment we delivered in Control Period 5, will deliver 140,000 more trains every year by 2024. These passenger benefits will be realised through completed projects such as the electrification from Paddington to Bristol Parkway and Reading to Newbury, as well as the Crossrail project between central London and Reading.

Throughout CP6 we will continue to work hand in hand with our Alliance partner GWR to enable the smooth introduction of further passenger benefits including new timetables that will see a step change in services offered. These new timetables will deliver improved local and long distance high speed services; journey time reductions on specific services and additional new services between major cities supporting passengers, freight, our communities, local businesses and economies.



During CP6 the Elizabeth line will open offering passengers ‘metro style’ frequency services from Reading and Heathrow Airport into and across Central London to Canary Wharf, Kent and Essex. We are focussed on successfully introducing the Elizabeth line, integrating it seamlessly with existing services and adopting new ways of working to accommodate the additional services it will bring.

We will continue to improve the reliability of the infrastructure in west London supporting the Heathrow Express service and work with CrossCountry and freight operators to improve the important services they run across our route.

Our Strategic Plan improvements will be delivered and are underpinned by five strategic priorities: the first of which is ***delighting our customers*** - our passengers, train and freight operators, line-side neighbours, businesses and stakeholders.

We will work with train operators to improve passengers' experience: delivering a reliable train service; improving customer service at our managed stations; improving passenger information during disruption; reducing the impact our infrastructure has on train services and when needed, getting trains back up and running as soon as we can. We value and act on feedback from passengers and will continue to listen and improve based on reports from our Train Operator partners and results from Transport Focus' National Rail Passenger Survey.

Throughout our plan we continue to keep ***Everyone Home Safe Every Day*** at the heart of what we do, delivering an even safer railway, further reducing train accident risk and improving passenger, public and workforce safety.

Being ***affordable and efficient*** with the public funding we receive continues to be a strategic priority and we have a target of delivering a net 8% efficiency plan by 2024.

Ultimately our railway is here to ***support jobs, housing and economic growth***, our fourth strategic priority.

This is only achieved by a great team and our fifth and final strategic priority, ***great people and great culture*** ensures that we recruit, develop and retain a diverse, skilled and motivated team who are driven by great service to passengers.

Our plans for CP6 have been developed with ongoing input from our Train Operators and stakeholders, and I thank them for their invaluable contributions. We look forward to working with them to deliver a more reliable, passenger focused, growing and affordable railway for the communities and businesses we serve.

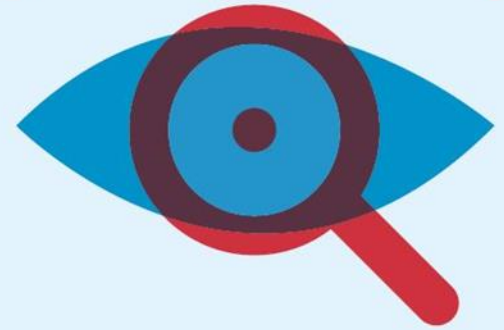
Mark Langman
Route Managing Director

NetworkRail

OUR PURPOSE

Excel in delivering a **safe, high performing, reliable and affordable railway,** be ambitious in creating **greater capacity** and be responsible for **connecting people** and **caring for the environment**

OUR VISION



To deliver a **great railway** that supports jobs, housing and **economic growth** across **our route**, now and for the **future**.


OUR 5 STRATEGIC PRIORITIES
Everyone Home Safe Every Day
Great People & Great Culture
Delighting Customers
Affordable & Efficient
Supporting Jobs, Housing & Economic Growth

The Western route stretches across the Thames Valley to Oxford, the Cotswolds, South Wales, the West and South West. It encompasses some of Britain's most important towns and cities, as well as one of Britain's busiest rail routes, the Great Western Mainline. We own, maintain and operate over 900 miles of railway and manage London Paddington, Reading and Bristol Temple Meads stations.

Western Route at a glance in Control Period 6

- We enable more than 2,200 passenger trains per day
- We have over 2,700 employees
- We manage London Paddington, 8th busiest station in the UK with 37m entry/exits; Reading 17m entry/exits and Bristol Temple Meads 11m entry/exits in 2017/18
- We will enable 140,000 more trains per year by 2024
- Our budget for operations, maintenance and renewals in CP6 (2019-24) is £2.765bn
- We will deliver 400 km of track improvements
- Additional new train services will be introduced to serve Bristol Temple Meads, Bristol Parkway, Bath, Cheltenham, South Wales and Paddington
- The services between Plymouth and Penzance will double to two trains per hour
- New Elizabeth line metro services will run from Reading through central London to Canary Wharf and to Shenfield
- We have a target of improving workforce safety by 64% by 2024
- We will invest £11m on accommodation for teams working on the railway
- We want 20% of our workforce to be female by 2020

More than 20,000 people a day travel by train to Heathrow, Europe's busiest airport

We enable significant freight movement of construction aggregates, automotive freight, aviation fuel and Cornish clay across our route from local industries and the Ports of Bristol and Avonmouth

Supporting automotive industries (Swindon and Oxford), aggregates (Mendips), metals (South Wales) and petroleum (Westerleigh and Theale)

Serving seven passenger and six freight operators

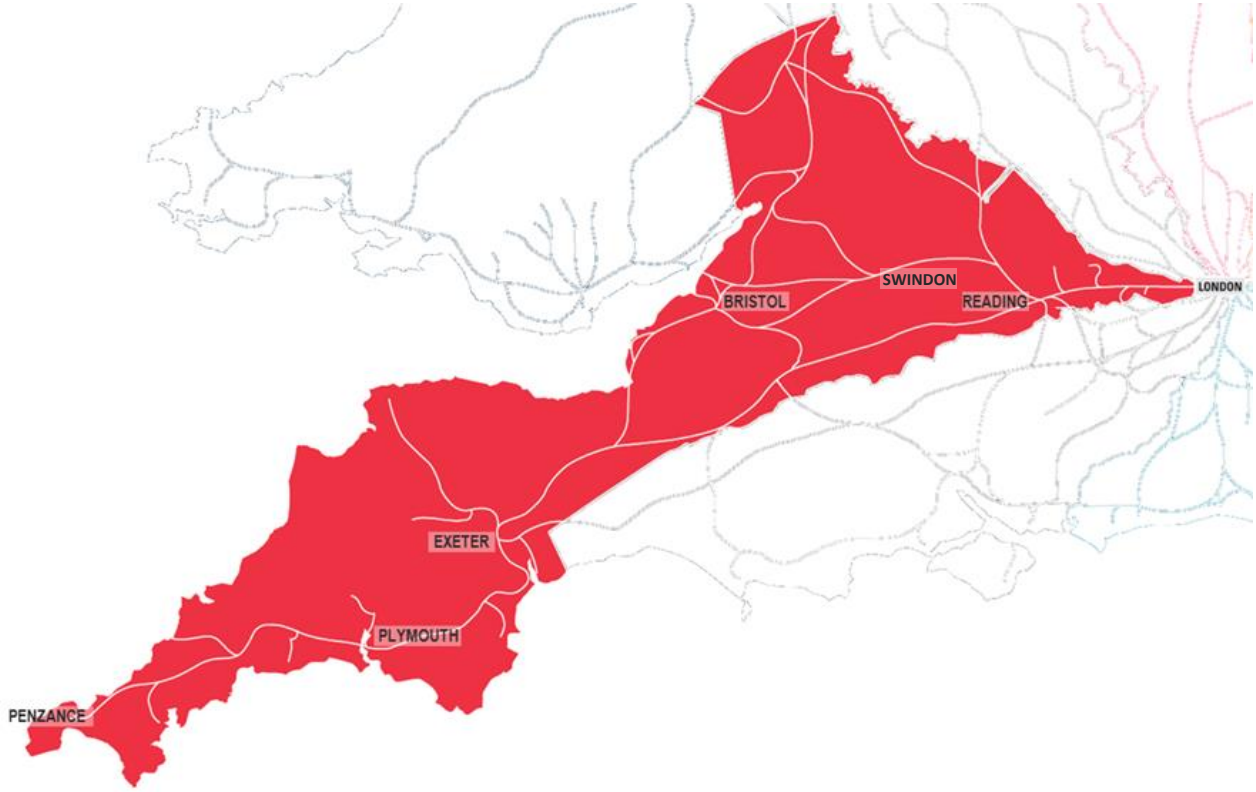
Engaging with 55 local authorities, ten local enterprise partnerships, 66 members of parliament and four elected mayors

Western Route Geography

Stretching from the heart of London to the Atlantic coast, the Western route is vast and diverse and faces a unique set of challenges.

The route has two key axes. One runs from London to South Wales, via Reading, Swindon and Bristol Parkway. The other branches off at Reading and leads to the far Southwest at Penzance, taking in Newbury, Taunton, Exeter and Plymouth along the way. Around that are lines to Oxford, Worcester, Gloucester, Cheltenham, and a host of branch lines from the Thames Valley to Cornwall.

The route borders the Wessex, Wales, Anglia and London North Western routes, and serves seven passenger train operators, who between them run over 2,200 trains on the network each day, both within and beyond the Western's borders. The route also contains several dedicated freight lines, including the second busiest freight corridor into London, which is used by DB Cargo and Freightliner.



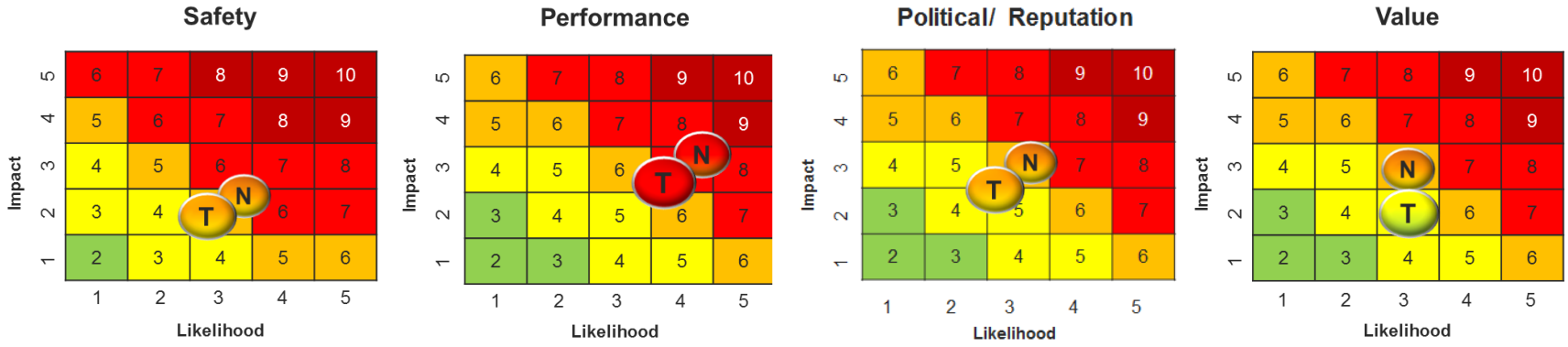
Route level CP6 financial summary

A summary of our investment split by operations, maintenance and renewals is shown below. Western Route does not require funding for Digital Railway in CP6.

	CP5 (£m)	CP6 (£m)						CP7 (£m)	
	18/19	19/20	20/21	21/22	22/23	23/24	CP6 Total	24/25	25/26
Operations	59	54	54	55	54	53	270	56	61
Maintenance	150	173	184	177	183	189	907	193	197
Operations & Support Costs	4	22	2	14	16	16	69	16	17
Total Controllable Costs	**214**	**250**	**240**	**246**	**253**	**258**	**1,246**	**265**	**275**
Total Renewals	**263**	**240**	**273**	**339**	**355**	**310**	**1,518**	**176**	**180**
Non-Controllable Costs	0	0	0	0	0	0	1	0	0
Total Other Costs	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Total Expenditure	**477**	**489**	**513**	**585**	**607**	**568**	**2,765**	**441**	**455**

Route level CP6 risk profile

Risks within our plan are assessed and monitored through Enterprise Risk Registers in accordance with Network Rail policy. The heatmaps shown below provide an aggregated view of the risk contained within our plans. All ERRs align to the strategic themes set out in this document and are reviewed at route executive level each quarter. Each review cycle assesses the impact of any change to workbanks to ensure that enterprise level risks remain adequately managed.



2. Route objectives

This plan is predicated on the key assumptions laid out in Appendix B and will be impacted as these assumptions change

Long Term Scorecard

Safety		19/20	20/21	21/22	22/23	23/24	24/25	25/26	Achievability
Lost Time Injury Frequency Rate (LTIFR)	WORSE THAN TARGET	0.402	0.336	0.291	0.234	0.179	0.179	0.179	
	TARGET	0.383	0.320	0.277	0.223	0.170	0.170	0.170	
	BETTER THAN TARGET	0.364	0.304	0.263	0.212	0.162	0.162	0.162	
Risk Management Maturity Model (RM3)	WORSE THAN TARGET	6	6	6	6	6	6	6	
	TARGET	8	8	8	8	8	8	8	
	BETTER THAN TARGET	10	10	10	10	10	10	10	
Train Accident Risk Reduction (TARR)	WORSE THAN TARGET	60%	60%	60%	60%	60%	60%	60%	
	TARGET	80%	80%	80%	80%	80%	80%	80%	
	BETTER THAN TARGET	100%	100%	100%	100%	100%	100%	100%	
Top 10 Milestones to Reduce Level Crossing Risk	WORSE THAN TARGET	6	6	6	6	6	6	6	
	TARGET	8	8	8	8	8	8	8	
	BETTER THAN TARGET	10	10	10	10	10	10	10	
Train Performance		**19/20**	**20/21**	**21/22**	**22/23**	**23/24**	**24/25**	**25/26**	**Achievability**
Consistent Route Measure – Performance (CRM-P) Network Rail Caused Delay Minutes	WORSE THAN TARGET	2.33	2.25	2.00	1.95	1.95	1.96	1.96	
	TARGET	2.03	1.96	1.74	1.70	1.70	1.70	1.70	
	BETTER THAN TARGET	1.92	1.86	1.65	1.61	1.61	1.62	1.62	
Freight Delivery Metric (FDM-R)	WORSE THAN TARGET	92.6%	92.6%	92.6%	92.6%	92.6%	92.6%	92.6%	
	TARGET	93.1%	94.0%	94.0%	94.0%	94.0%	94.0%	94.0%	
	BETTER THAN TARGET	93.7%	94.4%	94.4%	94.4%	94.4%	94.4%	94.4%	
Great Western Railway - Level 2 Scorecard	WORSE THAN TARGET	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
	TARGET	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	
	BETTER THAN TARGET	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
Heathrow Express - Level 2 Scorecard	WORSE THAN TARGET	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
	TARGET	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	
	BETTER THAN TARGET	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
Cross Country right time departure at Bristol Parkway	WORSE THAN TARGET	46.0%	58%	58%	58%	58%	58%	58%	
	TARGET	50.0%	60%	60%	60%	60%	60%	60%	
	BETTER THAN TARGET	53.0%	61%	61%	61%	61%	61%	61%	
Freight growth metric (Billion NTM)	WORSE THAN TARGET	0.981	0.999	1.044	1.098	1.188	1.188	1.188	
	TARGET	1.090	1.110	1.160	1.220	1.320	1.320	1.320	
	BETTER THAN TARGET	1.199	1.221	1.276	1.342	1.452	1.452	1.452	

Great Western Railway: Punctuality at all recorded station stops (on time to 3)	**WORSE THAN TARGET**	69.0%	66.9%	68.8%	70.9%	72.2%	72.2%	72.2%	
	TARGET	76.0%	74.4%	76.5%	78.7%	80.2%	80.2%	80.2%	
	BETTER THAN TARGET	79.3%	78.1%	80.3%	82.7%	84.2%	84.2%	84.2%	
Great Western Railway: Public Performance Measure (PPM)	**WORSE THAN TARGET**	84.0%	83.8%	85.4%	87.0%	88.1%	88.1%	88.1%	
	TARGET	84.5%	85.5%	87.1%	88.8%	89.9%	89.9%	89.9%	
	BETTER THAN TARGET	85.0%	86.4%	88.0%	89.7%	90.8%	90.8%	90.8%	
Great Western Railway: Average Passenger Lateness	**WORSE THAN TARGET**	4.360	4.250	4.150	4.040	3.970	3.970	3.970	
	TARGET	3.960	3.850	3.740	3.630	3.560	3.560	3.560	
	BETTER THAN TARGET	3.550	3.440	3.330	3.220	3.150	3.150	3.150	
Great Western Railway: Level of cancellations	**WORSE THAN TARGET**	3.6%	2.94%	2.73%	2.52%	2.21%	2.21%	2.21%	
	TARGET	3.1%	2.80%	2.60%	2.40%	2.10%	2.10%	2.10%	
	BETTER THAN TARGET	2.9%	2.52%	2.34%	2.16%	1.89%	1.89%	1.89%	
Great Western Railway: NR caused delay minutes	**WORSE THAN TARGET**	972K	940k	931k	921k	911k	911k	911k	
	TARGET	889K	860k	852k	842k	833k	833k	833k	
	BETTER THAN TARGET	827K	836k	828k	819k	810k	810k	810k	
Heathrow Express: Punctuality at all recorded station stops	**WORSE THAN TARGET**	75.0%	79.5%	79.9%	80.0%	80.1%	80.1%	80.1%	
	TARGET	77.8%	80.0%	80.1%	80.3%	81.0%	81.0%	81.0%	
	BETTER THAN TARGET	79.0%	80.4%	80.6%	82.0%	83.0%	83.0%	83.0%	
Heathrow Express: Right-time at destination	**WORSE THAN TARGET**	64.0%	69.3%	70.1%	70.3%	70.4%	70.4%	70.4%	
	TARGET	67.0%	70.3%	70.6%	70.8%	71.0%	71.0%	71.0%	
	BETTER THAN TARGET	70.0%	71.0%	71.1%	71.2%	71.4%	71.4%	71.4%	
Heathrow Express: Level of cancellations	**WORSE THAN TARGET**	2.0%	1.6%	1.5%	1.5%	1.5%	1.5%	1.5%	
	TARGET	1.8%	1.3%	1.2%	1.2%	1.2%	1.2%	1.2%	
	BETTER THAN TARGET	1.6%	1.2%	1.1%	1.1%	1.1%	1.1%	1.1%	
Heathrow Express: NR caused delay minutes	**WORSE THAN TARGET**	35K	35K	35K	35K	35K	35K	35K	
	TARGET	30K	30K	30K	30K	30K	30K	30K	
	BETTER THAN TARGET	25K	25K	25K	25K	25K	25K	25K	
Cross Country right time departure at Reading	**WORSE THAN TARGET**	NA	0.350	0.350	0.350	0.350	0.350	0.350	
	TARGET	NA	0.400	0.400	0.400	0.400	0.400	0.400	
	BETTER THAN TARGET	NA	0.450	0.450	0.450	0.450	0.450	0.450	
Locally Driven Measures		**19/20**	**20/21**	**21/22**	**22/23**	**23/24**	**24/25**	**25/26**	**Achievability**
Reduction in railway worker complaints	**WORSE THAN TARGET**	950	950	950	950	950	950	950	
	TARGET	850	850	850	850	850	850	850	
	BETTER THAN TARGET	750	750	750	750	750	750	750	
Diversity and inclusion - % undertaken everyone learning training	**WORSE THAN TARGET**	80%	95%	95%	95%	95%	95%	95%	
	TARGET	85%	98%	98%	98%	98%	98%	98%	
	BETTER THAN TARGET	90%	100%	100%	100%	100%	100%	100%	
Great people managers - % attended training	**WORSE THAN TARGET**	140	154	169	186	205	225	248	
	TARGET	156	172	189	208	228	251	276	
	BETTER THAN TARGET	188	207	227	250	275	303	333	
Bands 1-8 Objective setting, interim and final review meetings held within timescales Reduction in railway worker complaints	**WORSE THAN TARGET**	80%	85%	90%	90%	90%	90%	90%	
	TARGET	90%	90%	95%	95%	95%	95%	95%	
	BETTER THAN TARGET	100%	100%	100%	100%	100%	100%	100%	

Sustainability and Asset Management Capability		19/20	20/21	21/22	22/23	23/24	24/25	25/26	Achievability
Renewals – 7 Key Volumes	WORSE THAN TARGET	90%	90%	90%	90%	90%	90%	90%	
	TARGET	95%	95%	95%	95%	95%	95%	95%	
	BETTER THAN TARGET	100%	100%	100%	100%	100%	100%	100%	
Composite Reliability Index (CRI)	WORSE THAN TARGET	-3.7%	-1.6%	0.5%	3.6%	6.6%	0.5%	1.0%	
	TARGET	-2.7%	-0.6%	1.5%	4.6%	7.6%	1.0%	2.0%	
	BETTER THAN TARGET	-1.7%	0.6%	2.5%	6.6%	8.6%	1.5%	3.0%	
Composite Sustainability Index (CSI)*	WORSE THAN TARGET	N/A	N/A	N/A	N/A	1.5%	N/A	N/A	
	TARGET	N/A	N/A	N/A	N/A	1.6%	N/A	N/A	
	BETTER THAN TARGET	N/A	N/A	N/A	N/A	1.7%	N/A	N/A	
Number of Service Affecting Failures (SAF)	WORSE THAN TARGET	2,449	2,413	2,325	2,242	2,181	2,160	2,138	
	TARGET	2,332	2,298	2,214	2,135	2,077	2,057	2,036	
	BETTER THAN TARGET	2,215	2,183	2,103	2,028	1,973	1,954	1,934	
Top Investment Milestones	WORSE THAN TARGET	80%	80%	80%	80%	80%	80%	80%	
	TARGET	90%	90%	90%	90%	90%	90%	90%	
	BETTER THAN TARGET	100%	100%	100%	100%	100%	100%	100%	
Financial Performance		**19/20**	**20/21**	**21/22**	**22/23**	**23/24**	**24/25**	**25/26**	**Achievability**
Financial Performance Measure (FPM) – Gross Profit & Loss	WORSE THAN TARGET	-5.5	-5.5	-5.5	-5.5	-5.5	-5.5	-5.5	
	TARGET	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	BETTER THAN TARGET	5.5	5.5	5.5	5.5	5.5	5.5	5.5	
Financial Performance Measure (FPM) – Gross Renewals	WORSE THAN TARGET	-18.2	-18.2	-18.2	-18.2	-18.2	-18.2	-18.2	
	TARGET	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	BETTER THAN TARGET	18.2	18.2	18.2	18.2	18.2	18.2	18.2	
Financial Performance Measure (FPM) – Gross Enhancements	WORSE THAN TARGET	-31.8	-31.8	-31.8	-31.8	-31.8	-31.8	-31.8	
	TARGET	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	BETTER THAN TARGET	31.8	31.8	31.8	31.8	31.8	31.8	31.8	
Cash compliance – income & expenditure	WORSE THAN TARGET								
	TARGET								
	BETTER THAN TARGET	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

**The CSI forecast is in line with the Final Determination. This will be updated via change control with the ORR in May/June to reflect the CP5 actuals and RF11 (Delivery Plan) submission*

Our annual route scorecard is our main tool for reporting business performance. It is used internally within the route, and externally with our customers and our supervisory board to monitor our performance. It is developed collaboratively through consultation with our customers. Accordingly, the metrics and output requirements will be subject to change as we work with our stakeholders and customers.

Our scorecard consists of metrics related to all areas of business performance, a target and a lower and upper range ("worse than target" / "better than target") is included to enable detailed monitoring of performance. The scorecard is driven by the plans included within this document. Our long term scorecard also includes an assessment of the achievability of the proposed outputs, using the definitions, here.

Achievability definitions (applies to "target" value)	
RED	Very challenging, likely to require substantial organisational and cultural change to achieve and/or highly dependent on third party involvement
AMBER	Challenging, likely to require moderate organisational and cultural change to achieve and/or dependent on third party involvement
GREEN	Achievable, builds on existing organisational and cultural capabilities and little or no dependency on third parties for delivery

In our long-term scorecard, for **safety** we continue to target reduction in our lost time injury frequency rate (LTIFR), reduction in risk at our level crossings, reduction in operational train accidents and public safety risk, and increasing our environmental performance with improving rates in close call reporting and closure. We have provided funding in CP6 to further improve safety.

Our objective is to further improve our safety and environmental position through a series of targeted initiatives, mainly aimed at improving how we can work more safely and responsibly. Our route plans have been developed alongside technology development led by the central Safety, Technical & Engineering function and we will leverage developments as they become available.

For CP6, our plan has been developed so route objectives align with Network Rail's "Home Safe" plan, selected deliverables within the Rail Industry / RSSB "Leading Health and Safety on Britain's Railway - A strategy for working together" and emerging priorities within our Route Safety Alliance plan (delivered with GWR, MTR Crossrail, HEx and the British Transport Police). Detail on this activity is held within the Route Safety Improvement Plan.

The lost time injury frequency rate (LTIFR) target is set to reflect Network Rail's national aspiration to benchmark ourselves against other industries who lead on safety. We are targeting a challenging reduction of more than 60% in our LTIFR with a scorecard target of 0.170 by the end of CP6, which is backed up by a well developed plan to be implemented by the route and Network Rail's Safety, Technical and Engineering team, combined with the activities articulated in our route plan. This will result in workforce safety levels comparable with the best of other industries such as oil and gas. However, the criteria used by other such industries vary from how Network Rail currently measures LTIFR. As a result, it is recognised that there will need to be adjustments made to the NR definition of a lost time injury so that a comparable measure is created.

In **train performance** we are focusing on a wider suite of metrics than in CP5, in response to our stakeholder feedback. As well as using the CP5 metric of public performance measure (PPM) for comparison purposes, we are focusing our achievement on new metrics, notably punctuality at all recorded stations. Overall, despite the challenges of the increased number of trains and passenger volumes, we are forecasting an improvement in train performance. This has an "amber" delivery rating in view of the level of risk from the introduction of the new Elizabeth line services and the potential impact of HS2 construction. Through our close collaboration with HS2 and alliance working these risks will be minimised and managed throughout the control period.

Our **locally-driven customer measures** continue to focus on areas that will improve the passenger and public experience when living near or traveling on the rail network. The metrics also reflect the content of the Level 2 scorecards agreed with our lead train operators.

For **asset management** our measures focus on our asset reliability, sustainability and volume delivery. Our asset reliability will reduce at the start of CP6 compared to the end of CP5, but is then forecast to improve through to the end of the control period as benefits are realised from the conversion of track circuits to axle counters between Paddington and Airport Junction which will improve reliability in this key section of route. The forecast for the composite reliability index shows the impact of the calculation resetting to compare to the end of CP5, and the impact of the full extent of electrification. As with service affecting failures, improvement is forecast to the end of the control period reflecting the benefits of our improvement plans. Our asset volumes will be delivered against our detailed One Plan, linking all asset work banks and maintenance to available track access. The plan is deliverable and has undergone detailed review and assessment both internally, with our delivery teams and by an independent reporter.

Our **financial performance** scorecard targets are based on variance to our plan. If we deliver all our objectives to the plan we would end each year with a zero variance to targets. Control period targets have been set but with the potential for disruptive works at Old Oak Common as a result of the HS2 programme and the continuation of the electrification programme into CP6, definition of targets and achievement assessment will need to be reviewed once the full programme and timeline of works in confirmed.

3. Safety

3.1. Safety objectives

Safety		19/20	20/21	21/22	22/23	23/24	24/25	25/26	Achievability
Lost Time Injury Frequency Rate (LTIFR)	WORSE THAN TARGET	0.402	0.336	0.291	0.234	0.179	0.179	0.179	
	TARGET	0.383	0.320	0.277	0.223	0.170	0.170	0.170	
	BETTER THAN TARGET	0.364	0.304	0.263	0.212	0.162	0.162	0.162	
Risk Management Maturity Model (RM3)	WORSE THAN TARGET	6	6	6	6	6	6	6	
	TARGET	8	8	8	8	8	8	8	
	BETTER THAN TARGET	10	10	10	10	10	10	10	
Train Accident Risk Reduction (TARR)	WORSE THAN TARGET	60%	60%	60%	60%	60%	60%	60%	
	TARGET	80%	80%	80%	80%	80%	80%	80%	
	BETTER THAN TARGET	100%	100%	100%	100%	100%	100%	100%	
Top 10 Milestones to Reduce Level Crossing Risk	WORSE THAN TARGET	6	6	6	6	6	6	6	
	TARGET	8	8	8	8	8	8	8	
	BETTER THAN TARGET	10	10	10	10	10	10	10	

Key stakeholder priorities

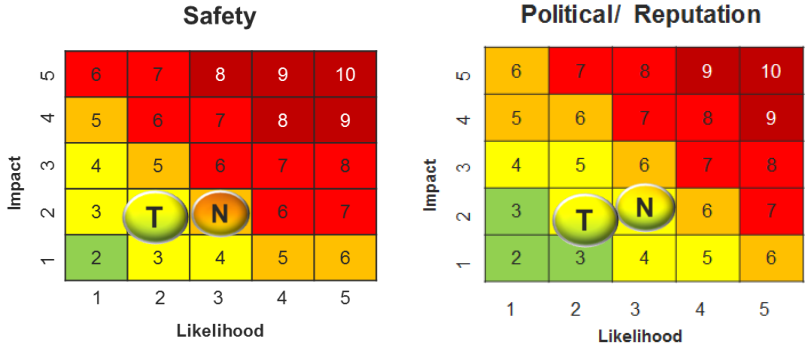
Below is a summary of key stakeholder priorities identified through our engagement with stakeholders during the development of the route plan. Further information including the approach taken to engage with our stakeholders can be found in Appendix A.

Key stakeholder priorities	Response
Closure of GWR 'Close Call Reports' via fault reporting app.	Western NR developing revised Close Call structure within our maintenance delivery units to assess, action and feedback on Close Call reports. This will improve risk identification and removal into CP6 and build on our already high rate of Close Call action and closure. .
Enhancement activity on Driver Walking Routes	Western NR have established a Driver walking route register and with GWR, enhancing these on a prioritised basis. This will continue into CP6.
Reduction in Signal Passed at Danger (SPAD) events	Western NR and GWR have developed a SPAD reduction strategy that aligns to industry (RSSB) best practice. Delivery of these programmes have commenced and will continue into CP6.

3.2. Safety activity prioritisation and risk outcome

Summary of objectives		Improve delivery of injury free (workforce, passenger and public) infrastructure operations so "everyone" who interacts with our railway "returns home safe everyday", in line with Network Rail's "Home Safe and Responsible Railway Plan", whilst causing minimum environmental impact.		
No.	**Key objective drivers (constraints, risks and opportunities)**	**What we plan to do**	**Owner**	**Timescale (start/ finish)**
1	Opportunity: **Safer Trackside Working.**	A collection of programmes that will reduce the frequency of work on or near the line and will provide enhancement in trackworker protection systems and planning and delivering competencies when they do.	DRSHQE, COO	Through CP6
2	Opportunity: **Driving safety** improvements	Building on our successful CP5 programme, this will continue to improve driver behaviour via vehicle speed warning system data and driver risk assessments. This will support improved driver awareness and planning.	DRSHQE, COO	Through CP6
3	Opportunity: **Route workforce safety, health and wellness** improvement.	Funding has been allocated for workforce safety, health and wellness as part of the core CP6 submission. This fund will be used on a priority basis to support track worker protection equipment, built asset improvements (access points, safe cess and informational signage), enhanced manual handling equipment, health surveillance and general staff educational programmes.	DRSHQE, COO	Through CP6
4	Opportunity: **Route level crossing** improvement fund	Funding has been allocated for level crossing renewals, enhancements and closures as part of the core CP6 submission, to be used to fund targeted closures at high risk level crossings to improve public safety.	DRSHQE / DRAM	Through CP6
5	Opportunity: **Operational and Passenger Safety**	Within our Alliance and OPSRAM industry engagement framework, the route has a number of programmes that will reduce the risk of operational irregularity.	DRSHQE, COO	Through CP6
6	Constraint: **Increase in passenger numbers** constrains opportunities for passenger risk reduction	Improve assessment of passenger train interface risk and slip/trip/fall risks at stations with our TOCs via Alliance Plan activities.	DRSHQE, COO	Through CP6
7	Risk: **Asset failures** impacting train operations	Asset renewals and enhancements in CP6 to address high risk sites and reduce potential number of service affecting failures.	DRAM, COO	Through CP6
8	Opportunity: Reducing **operational risk** on track and at stations, benefiting train and freight companies staff	The route with support of FOCs / TOCs, will improve collaborative risk assessment and incident investigations. Linking recommendations into wider improvement Alliance plan activities. This will complement established NR operational safety programmes, such as critical communications and SPAD reviews.	COO, DRSHQE	Through CP6
9	Opportunity: Reduce intended or unintended **public misuse** and access to our railway infrastructure, reducing suicide incidents	Focus and engagement with vulnerable and high frequency demographic groups through community/ ops safety, route teams and wider stakeholders (BTP, F/TOCs). We will build on improved data collection at emerging hotspot locations and respond with timely planned preventive improvement actions. This programme will also support our linked programme for Suicide Prevention.	COO, DRSHQE	Through CP6

10	Opportunity: Improve our **environmental sustainability** and energy management	Increase our focus on environmental sustainability. This will enact our route sustainability policy and increase our ecology and environmental management in line with ISO 14001. We will strengthen our weather resilience and climate change adaptation. We will further enhance our energy management capability to improve energy efficiency and reduce our carbon footprint.	DRAM, DRSHQE	Through CP6



Summary of risk outcome

Considerable mitigating activity is being be undertaken (200+ programmes) to benefiting workforce, passenger, public safety and health. The forecast risk position (target) is to improve the current position (net). This will be subject to continued risk review via visualisation, periodic business reviews and business assurance committee to identify additional mitigating actions.

3.3. Safety strategy

In our long-term scorecard, for safety we continue to target a reduction in our lost time injury frequency rate (LTIFR), reduce risk at our level crossings, a reduction in operational train accidents and public safety risk and improve our route safety culture via RM3. We also will increase our performance in environmental sustainability. We will continue to build on previous safety targets and have increased investment in CP6 to support this.

Our overarching strategy for safety, health, wellbeing and environment is:

- Further development of our inclusive safety (HSE) programme with clear accountabilities built upon a foundation of trust. Focus on building trust with our people, creating openness in safety, promoting reporting of incidents, accidents and close calls. This allows us to learn and act, thus making our infrastructure a safer place.

- Improving our learning culture developed by driving safety improvement through analysis and focused intervention planning. With focus on risk detection with analysis this allows us to be targeted with our resources. We are aware of our risk profile and collaborative in the development of countermeasures whilst contributing and considering wider shared learning.

Focus on Level Crossings

We have ringfenced funding to develop, progress and complete the closure of Tackley bridleway level crossing, located on a key section of the railway north of Oxford. In addition, four open level crossings will be renewed as the Automatic Barrier Crossing, Locally controlled (ABCL) type, adding barriers, yodelarms and wigwags at sites which have been subject to near misses in the past. Full, conventional renewals will take place at a further 19 level crossings around the route, bringing crossings up to modern standards and extending asset life. This will encompass a range of crossing types included Manually Controlled Barriers (MCBc), Automatic Half Barriers (AHBs) and Miniature Stop Lights (MSLs).

Within our overall safety fund we have provision to be able to commence implementation of some technological improvements, such as overlay MSLs and / or the new active warning system dubbed 'Project Meerkat' that provides an audible and visual warning of an approaching train; the scope of these is as yet undefined and will be developed through CP6. A minor works fund has been set aside to target both planned and reactive minor works to passive level crossings. This is a continuation of the fund set up in CP5 which has proven crucial in delivering safety improvements at footpath, bridleway and user-worked crossings.

We will continue our programme of level crossing. These are route-led closures focusing on the rationalisation of footpaths and bridleways, and the buy-out of user-worked crossing rights-holders. Our programme of narrative risk assessments and asset inspections will also continue, identifying closure and enhancement opportunities with schemes progressed under the oversight of the route level crossing steering group, subject to suitable cost-benefit analysis.

3.4. Occupational Health & Wellbeing strategy

Western Route has a clear Safety Culture Strategy for CP6 that is aligned to the RSSB Industry Plan and Network Rail's HomeSafe Plan.

Our plan is structured around three main streams:

- Workforce Safety: focus on reducing injuries by road driving, train striking persons on track, slip trip falls and manual handling injuries;
- Passenger & Public Safety: reducing risk of train derailments, train striking objects and train striking persons;
- Compliance, communication & beyond: improvements to our safety management system to strengthen assurance and improve HSE engagement.

Each of these streams has several constituent projects which individually and collectively deliver benefits. The route safety improvement plan will be updated regularly to maintain alignment to business priorities. The route safety plan will evolve further in CP6 to reflect and empower the significant work undertaken at local level by managers, frontline teams, individuals and union safety representatives. These programmes will be driven using Lean methods. Progress will be tracked and managed every period, widely communicated so the plan becomes a truly route-owned plan.

3.5. Security strategy

Through CP6 Western will continue to develop its approach to resilience (including business continuity, information governance and cyber security), through the adoption and implementation of a business continuity framework with appropriate business impact statements and continuity plans in place. Further, the route will continue to develop its contingent operating resource in order to maintain a level of service on the network if required. In developing these plans, the route will continue to work closely with our customers so that contingent resources are optimised based on customer service pattern aspirations.

Western Route manages significant assets which, when subject to security issues, can have negative impacts to rail performance, costs, reputation and safety, as well as to members of our organisation and those of stakeholders. Areas we aim to address our approach to security include people, railway infrastructure, cyber (technology and information), buildings and property, and equipment and materials.

Our security strategy is to comply with the National Railways Security Programme (NRSP), which is governed by Group Security centrally, but as a route we can work with them to improve our resilience. Some elements are nationally provided or managed such as IT, but within the route we will deliver this using a risk based approach considering the current climate and existing vulnerabilities to deliver enhancements.

- Physical assets and security systems – making our critical locations more resilient through enhancements to the physical infrastructure, CCTV and access control systems
- Operational – implementation of processes and procedures, training and briefing of staff, and delivering annual security exercises

We will work with the Group Security function in developing our approach to support our jointly owned goals of:-

1. Establish and maintain a safe and secure culture
2. Safeguard our people
3. Reduce the impacts of security incidents
4. Establish and develop clear roles and responsibilities for security
5. Establish systems that provide clear and relevant security information to stakeholders

4. Train performance

4.1. Train performance objectives

Train Performance		19/20	20/21	21/22	22/23	23/24	24/25	25/26	Achievability
Consistent Route Measure – Performance (CRM-P) Network Rail Caused Delay Minutes	WORSE THAN TARGET	2.33	2.25	2.00	1.95	1.95	1.96	1.96	
	TARGET	2.03	1.96	1.74	1.70	1.70	1.70	1.70	
	BETTER THAN TARGET	1.92	1.86	1.65	1.61	1.61	1.62	1.62	
Freight Delivery Metric (FDM-R)	WORSE THAN TARGET	92.6%	92.6%	92.6%	92.6%	92.6%	92.6%	92.6%	
	TARGET	93.1%	94.0%	94.0%	94.0%	94.0%	94.0%	94.0%	
	BETTER THAN TARGET	93.7%	94.4%	94.4%	94.4%	94.4%	94.4%	94.4%	
Great Western Railway - Level 2 Scorecard	WORSE THAN TARGET	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
	TARGET	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	
	BETTER THAN TARGET	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
Heathrow Express - Level 2 Scorecard	WORSE THAN TARGET	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
	TARGET	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	
	BETTER THAN TARGET	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
Cross Country right time departure at Bristol Parkway	WORSE THAN TARGET	46.0%	58%	58%	58%	58%	58%	58%	
	TARGET	50.0%	60%	60%	60%	60%	60%	60%	
	BETTER THAN TARGET	53.0%	61%	61%	61%	61%	61%	61%	
Freight growth metric (Billion NTM)	WORSE THAN TARGET	0.981	0.999	1.044	1.098	1.188	1.188	1.188	
	TARGET	1.090	1.110	1.160	1.220	1.320	1.320	1.320	
	BETTER THAN TARGET	1.199	1.221	1.276	1.342	1.452	1.452	1.452	
Great Western Railway: Punctuality at all recorded station stops (on time to 3)	WORSE THAN TARGET	69.0%	66.9%	68.8%	70.9%	72.2%	72.2%	72.2%	
	TARGET	76.0%	74.4%	76.5%	78.7%	80.2%	80.2%	80.2%	
	BETTER THAN TARGET	79.3%	78.1%	80.3%	82.7%	84.2%	84.2%	84.2%	
Great Western Railway: Public Performance Measure (PPM)	WORSE THAN TARGET	84.0%	83.8%	85.4%	87.0%	88.1%	88.1%	88.1%	
	TARGET	84.5%	85.5%	87.1%	88.8%	89.9%	89.9%	89.9%	
	BETTER THAN TARGET	85.0%	86.4%	88.0%	89.7%	90.8%	90.8%	90.8%	
Great Western Railway: Average Passenger Lateness	WORSE THAN TARGET	4.360	4.250	4.150	4.040	3.970	3.970	3.970	
	TARGET	3.960	3.850	3.740	3.630	3.560	3.560	3.560	
	BETTER THAN TARGET	3.550	3.440	3.330	3.220	3.150	3.150	3.150	
Great Western Railway: Level of cancellations	WORSE THAN TARGET	3.6%	2.94%	2.73%	2.52%	2.21%	2.21%	2.21%	
	TARGET	3.1%	2.80%	2.60%	2.40%	2.10%	2.10%	2.10%	
	BETTER THAN TARGET	2.9%	2.52%	2.34%	2.16%	1.89%	1.89%	1.89%	
Great Western Railway: NR caused delay minutes	WORSE THAN TARGET	972K	940k	931k	921k	911k	911k	911k	
	TARGET	889K	860k	852k	842k	833k	833k	833k	
	BETTER THAN TARGET	827K	836k	828k	819k	810k	810k	810k	
Heathrow Express: Punctuality at all recorded station stops	WORSE THAN TARGET	75.0%	79.5%	79.9%	80.0%	80.1%	80.1%	80.1%	
	TARGET	77.8%	80.0%	80.1%	80.3%	81.0%	81.0%	81.0%	

	BETTER THAN TARGET	79.0%	80.4%	80.6%	82.0%	83.0%	83.0%	83.0%	
Heathrow Express: Right-time at destination	**WORSE THAN TARGET**	64.0%	69.3%	70.1%	70.3%	70.4%	70.4%	70.4%	
	TARGET	67.0%	70.3%	70.6%	70.8%	71.0%	71.0%	71.0%	
	BETTER THAN TARGET	70.0%	71.0%	71.1%	71.2%	71.4%	71.4%	71.4%	
Heathrow Express: Level of cancellations	**WORSE THAN TARGET**	2.0%	1.6%	1.5%	1.5%	1.5%	1.5%	1.5%	
	TARGET	1.8%	1.3%	1.2%	1.2%	1.2%	1.2%	1.2%	
	BETTER THAN TARGET	1.6%	1.2%	1.1%	1.1%	1.1%	1.1%	1.1%	
Heathrow Express: NR caused delay minutes	**WORSE THAN TARGET**	35K	35K	35K	35K	35K	35K	35K	
	TARGET	30K	30K	30K	30K	30K	30K	30K	
	BETTER THAN TARGET	25K	25K	25K	25K	25K	25K	25K	
Cross Country right time departure at Reading	**WORSE THAN TARGET**	NA	0.350	0.350	0.350	0.350	0.350	0.350	
	TARGET	NA	0.400	0.400	0.400	0.400	0.400	0.400	
	BETTER THAN TARGET	NA	0.450	0.450	0.450	0.450	0.450	0.450	

Key stakeholder priorities

Below is a summary of key stakeholder priorities identified through our engagement with stakeholders during the development of the route plan. Further information including the approach taken to engage with our stakeholders can be found in Appendix A.

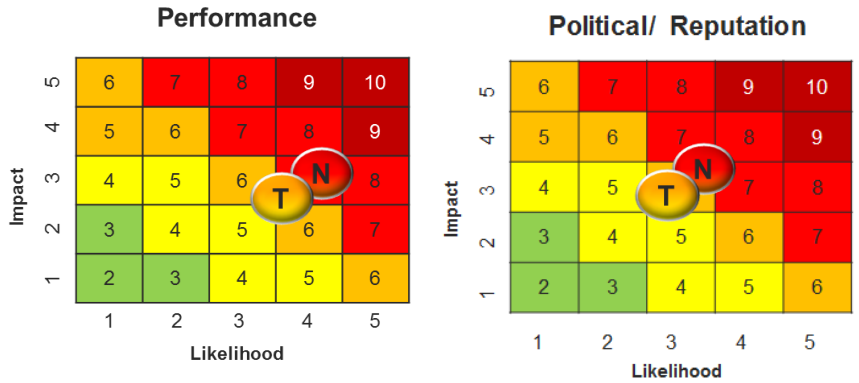
Key stakeholder priorities	Response
Passengers don't like or trust our existing performance metrics	Our performance plan has been recast to record and forecast "on time" performance at all recorded stations. This is now included on the route scorecard
Reduce journey times (through infrastructure intervention)	A study examining the benefit of infrastructure improvements between Totnes and Hemerdon to achieve faster journey times will be carried out in early CP6 (as recommended in the "Speed to the West" study)
Delivery of performance levels for franchises and minimisation of delay per incident	Our scorecard performance objectives are linked to our core asset plans and are subject to regular review

4.2. Train performance activity prioritisation and risk outcome

Summary of objectives	Our core objective for train performance is to improve the forecast CP5 levels of train performance through CP6, in spite of the additional volume of trains (140,000 more trains, resulting in a 12% increase in passenger train mileage and greater increase in vehicle mileage) and passengers forecast with the opening of full Elizabeth line, with the risk of delay imported and exported to other routes, and electric GWML services from December 2019. We will work collaborative to achieve the 92% Elizabeth line PPM commitment, as demonstrated by system modelling of this service. In addition, there will be potential for disruptive, but as yet to be confirmed, HS2 works at Old Oak Common.

No.	Key constraints, risks and opportunities	What we plan to do	Owner	Customers impacted	Timescale
1	Risk: Increase in train mileage (12% from 2020 onwards, compared to 2018/19) and service complexity due to timetable service increases (Elizabeth line and IEP)	Allianced Operation - Work to introduce a joint Control Pod onto the Operating floor of TVSC comprised of TOC and NR staff to speed decision making to enable better service management and recovery	COO	GWR, HEx, MTR Crossrail, CrossCountry	Through CP6
2	Opportunity: Impact of fleet changes and asset changes on performance, driven by the delivery of the Elizabeth line and electrification	For the start of CP6 • EMU running from Paddington to Didcot and Newbury (110mph), improved acceleration and reliability • IEP introduced, removal of slam door stock • DMU cascade to the West Country, improved reliability to West fleet (dependant on future franchise shape) • Elizabeth line stock introduced, three door and through trains to speed passenger loading	Director Route Sponsorship	GWR, MTR Crossrail	By end of 2019
3	Risk: Asset condition deterioration	Business as usual performance planning across the route to undertake additional maintenance to focus on poor performing assets and locations. Maintain for reliability and compliance.	COO	GWR, HEx, MTR Crossrail, XC, FOCs	Through CP6
4	Opportunity: Upgrade to Paddington to Airport Jn train detection	Convert obsolete track circuits to axle counters between Paddington and Airport Jn to improve reliability, this will build on current upgrade work converting analogue to digital.	DRAM	GWR, HEx, MTR Crossrail, FOCs	Development: from 2017/18 Delivery from 2019/20
5	Opportunity: Implementation of Risk-based Maintenance regimes	Implement a risk-based maintenance regime for the core inner Thames Valley section of the route	DRAM / COO	GWR, HEx, MTR Crossrail	From start of CP6
6	Risk: Trend of increasing delay per incident across all incidents (asset and train operators)	Changes with the control organisation to bring together the Route Control and Incident Officer organisations. Implement a comprehensive delay per incident plan to improve train service delivery, including stock and crew diagramming, building on our current activities to improve delay per incident.	HoP	All train operators	By end of CP5
7	Opportunity: Robust timetable planning	Integrated timetable planning with Capacity Planning and TOCs/FOCs into the route. CP5 will see an increase of 11 staff within the Western section of capacity planning.	COO	All on Western	By end of 2020
8	Opportunity: Traffic management trial	Ongoing work is looking to trial Integrated Traffic Management in the final year of CP5. This will cover the area signalled by Thames Valley Signalling Centre.	Director Route Sponsorship	GWR, HEx, MTR Crossrail, XC, LM, FOCs	End CP5
9	Risk: HS2 development and construction work at Old Oak Common, including additional freight service and line speed changes	Integrated planning with HS2 team & detailed performance mitigation planning.	DRAM & COO	GWR, HEx, MTR Crossrail	Through CP6

10	Opportunity: Great Western Refranchise (DfT work is reviewing the future shape of the Western Franchise)	Engage with DfT and bidders at an early stage and understand what the long term joint strategy should look like. Provides an opportunity to implement TRIP recommendations. Two route posts created to work with the DfT on the specification (one to be seconded to DfT demonstrating collaborative working). In addition, System Operator is creating a post to lead on the franchise to align the working of the System Operator and the route. However, continued direct awards and any remapping of the franchise geography will potentially erode this opportunity.	COO PSP	GWR	From late CP6 (depending on franchise timetable)
11	Risk: GWR refranchising	Ongoing work will define the shape of the new franchise(s) which will impact on our plans.	COO	GWR	From late CP6 (depending on franchise timetable)



Summary of risk outcome
In view of the increase in planned train services, and the potential impact of HS2 construction on performance, performance risk (and consequently reputational risk) will be outside of appetite. However, depending on the outcome of the current trial, implementing traffic management and a connected driver advisory system could bring improvements to service management and delay per incident

4.3. Operational Performance strategy

The overarching operational performance strategy is outlined below. This is a jointly agreed strategy with our alliance partners GWR and embraces collaborative working and continuous improvement across both businesses to deliver for our customers.

The key themes of the strategy are:

- Developing employee competence and embedding the behaviours of continuous improvement and collaboration
- Providing clear messaging for all audiences to enable clear understanding of goals
- Ensuring successful delivery of the timetable and recovery of the train service in times of incident
- Establishing a strong risk management structure with clear command and control for significant incidents on and around the network

4.4. Capacity and timetabling strategy

Capacity Planning's long-term vision is to deliver a zero-defect timetable that's safe, robust and able to accommodates growth. It is the guiding mind for planning activities across the rail industry and is organised to deliver the following activities:

- capability and capacity analysis to support investment, service level and franchise decisions
- advanced timetabling activities in line with agreed Event Steering Groups
- development and delivery of the working timetable process, including leadership of industry steering groups to support timetable change, management of the timetable planning rules and delivery of permanent alteration for emerging operator requirements
- the weekly adjustment of the timetable for engineering work and short-term operator requirements
- Ownership of the engineering access planning framework

As a part of System Operator, Capacity Planning aligns with the strategic planning teams to support effective relationships with route businesses.

To achieve this vision, the System Operator strategy comprises the following priorities:

- Increased capability: process, organisation, technology and information, to deliver safe and high performing timetables that continue to accommodate growth;
- To have a highly efficient and effective modelling, simulation and predictive analytics capability to improve key decisions in the end to end planning process (e.g. franchise specification or capacity allocation when access is restricted);
- More accurate rules, and increased systems automation, to develop a more granular timetable with the potential to release the quantum of train services without compromising reliability;
- Delivery of customer focused professional services, ensuring industry wide participation in the production of quality outputs;
- Ability to use all functionality offered in our planning systems providing greater precision and a higher level of automation eliminating redundant systems and better utilisation of scarce planner resource;
- Timetable change delivered through a collaborative approach in full compliance with Part D of the Network Code and other relevant contracts.

5. Locally driven measures

5.1. Locally driven objectives

Locally Driven Measures		19/20	20/21	21/22	22/23	23/24	24/25	25/26	Achievability
Reduction in railway worker complaints	**WORSE THAN TARGET**	950	950	950	950	950	950	950	
	TARGET	850	850	850	850	850	850	850	
	BETTER THAN TARGET	750	750	750	750	750	750	750	
Diversity and inclusion - % undertaken everyone learning training	**WORSE THAN TARGET**	80%	95%	95%	95%	95%	95%	95%	
	TARGET	85%	98%	98%	98%	98%	98%	98%	
	BETTER THAN TARGET	90%	100%	100%	100%	100%	100%	100%	
Great people managers - % attended training	**WORSE THAN TARGET**	140	154	169	186	205	225	248	
	TARGET	156	172	189	208	228	251	276	
	BETTER THAN TARGET	188	207	227	250	275	303	333	
Bands 1-8 Objective setting, interim and final review meetings held within timescales Reduction in railway worker complaints	**WORSE THAN TARGET**	80%	85%	90%	90%	90%	90%	90%	
	TARGET	90%	90%	95%	95%	95%	95%	95%	
	BETTER THAN TARGET	100%	100%	100%	100%	100%	100%	100%	

Key stakeholder priorities

Below is a summary of key stakeholder priorities identified through our engagement with stakeholders during the development of the route plan. Further information including the approach taken to engage with our stakeholders can be found in Appendix A.

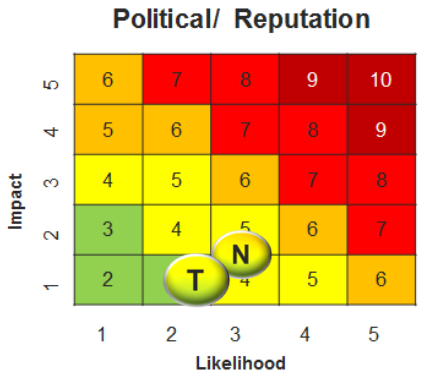
Key stakeholder priorities	Response
Need to work with our stakeholders on growing the economy through rail	An Alliance workstream has been set-up with GWR to build an aligned approach to business development. Our route supervisory board also has a role in bringing together stakeholders, as does the contribution of third-party finance to the railway
Need to attract greater third-part investment to rail	Western route has appointed a Business Development Director to actively seek out investment opportunities
Network Rail's route boundaries in the Worcester area need review	The transfer of the Worcester area to LNW from Western has been developed through joint working between the routes and will be implemented during CP6. Business processes are being followed to facilitate the transfer of all assets, systems, funding and people at the earliest opportunity
Individual station-specific metrics do not accurately represent train performance across the route	This refers to a metric of CrossCountry train performance at Bristol Parkway, which was nominated to the scorecard by CrossCountry, and remains on our scorecard at their request
Greater clarity on scorecard measures is needed	The detailed scorecard supporting information now includes definition to allow greater clarity of each measure

Include a metric to cover overall passenger journey experience (door to door), include additional customer satisfaction, third party funding, economic growth, environmental benefit and connectivity metrics	Not all proposed metrics can be included on the scorecard without overcomplicating the document. Metrics have been added to cover train accident risk and level crossing risk reduction milestones. NRPS is being used to measure passenger satisfaction and is included in the scorecard. The scorecard needs to be customer focussed and balance internal and external metrics
Lack of alignment between Network Rail and train operator outcomes	The scorecard process, and the performance planning process, allow greater discussion and alignment between NR and TOCs for performance outcomes which will address this concern
Broad agreement that financial metrics should be available, but mixed views as to whether to include on the route scorecard	Financial metrics have been included on the scorecard for visibility and transparency. Our funding management and efficiency delivery is a key priority of our business
There are some perception and influence issues with the NRPS, so greater use of direct survey and social media should be made	NRPS is included on the scorecard for consistency with other routes, and as it is Transport Focus's preferred metric. Our customers also note the profound impact that NR activity can have on NRPS scores, and that NRPS is often a franchise metric Measurement of social media is now being undertaken by the route communications team
Increase train frequencies	We have set up greater dialogue and liaison with the DfT about appropriate franchise specification
Extend hours of train operation (late night / early morning and weekends)	We have set up greater dialogue and liaison with the DfT about appropriate franchise specification and are introducing a risk based maintenance regime for Paddington to Reading to respond to the reduction in maintenance access. A minimum pf access for access will be required, however
Train planning resource	We have ongoing discussions with the capacity planning teams to influence provision of further resource

5.2. Locally driven objectives activity prioritisation and risk outcome

Summary of objectives	Our aim is to maintain customer and passenger satisfaction through CP6 due to the significant number of passenger improvement projects being implemented. This is against the backdrop of increased challenges on performance and during continued construction and modernisation works. We aim to do this through robust risk and mitigation planning.

No.	Key constraints, risks and opportunities	What we plan to do	Owner	Customers impacted	Timescale
1	Risk: HS2 development and construction work at Old Oak Common will impact our ability to run a train service against our commitments	Integrated planning with HS2 team & detailed performance mitigation planning, working with LNW route	DRAM & COO	GWR, HEx, MTR Crossrail	Through CP6
2	Risk: Declining asset performance as asset condition deteriorates	Undertake additional maintenance to focus on poor performing assets and locations	COO	GWR, HEx, MTR Crossrail, XC	Start of CP6
3	Constraint: continued modernisation work is likely to generate a volume of railway work complaints	Continued focus on "being a good neighbour", advance warning of disruption through direct public and media engagement	HoRC	All on Western	Through CP6
4	Opportunity: alliance working with train operators (notably Great Western Railway and MTR Crossrail) to present unified public messaging	Continue to develop our alliance approach to communications and customer and stakeholder engagement to develop joint strategies to address potential impacts on passenger and customer satisfaction	COO	GWR, MTR Crossrail	Through CP6
5	Opportunity: use of level 2 scorecards	Continue to use level 2 scorecards to focus our delivery of priorities for our customers	HoCRM	GWR, HEx	Through CP6
6	Opportunity: managed stations passenger satisfaction	Develop local plans at our managed stations to improve passenger satisfaction	HoCRM	GWR, HEx, MTR Crossrail, XC	Through CP6
7	Opportunity: Bristol Temple Meads passenger satisfaction	Planned works to renew the roof at Bristol Temple Meads should result in an improved passenger experience on completion	DRAM	GWR, XC	By 2022/23



Summary of risk outcome
Reputation risk clearly linked to likely train performance outturn, as well as impact of community disruption through continued modernisation works. The risk likelihood worsens due to the linkage to performance and the deferral of electrification schemes between control periods extending the construction disruption period.

6. Sustainability & asset management capability

6.1. Sustainability & asset management capability objectives

Sustainability and Asset Management Capability		19/20	20/21	21/22	22/23	23/24	24/25	25/26	Achievability
Renewals – 7 Key Volumes	**WORSE THAN TARGET**	90%	90%	90%	90%	90%	90%	90%	
	TARGET	95%	95%	95%	95%	95%	95%	95%	
	BETTER THAN TARGET	100%	100%	100%	100%	100%	100%	100%	
Composite Reliability Index (CRI)	**WORSE THAN TARGET**	-3.7%	-1.6%	0.5%	3.6%	6.6%	0.5%	1.0%	
	TARGET	-2.7%	-0.6%	1.5%	4.6%	7.6%	1.0%	2.0%	
	BETTER THAN TARGET	-1.7%	0.6%	2.5%	6.6%	8.6%	1.5%	3.0%	
Composite Sustainability Index (CSI)	**WORSE THAN TARGET**	N/A	N/A	N/A	N/A	1.5%	N/A	N/A	
	TARGET	N/A	N/A	N/A	N/A	1.6%	N/A	N/A	
	BETTER THAN TARGET	N/A	N/A	N/A	N/A	1.7%	N/A	N/A	
Number of Service Affecting Failures (SAF)	**WORSE THAN TARGET**	2,449	2,413	2,325	2,242	2,181	2,160	2,138	
	TARGET	2,332	2,298	2,214	2,135	2,077	2,057	2,036	
	BETTER THAN TARGET	2,215	2,183	2,103	2,028	1,973	1,954	1,934	
Top Investment Milestones	**WORSE THAN TARGET**	80%	80%	80%	80%	80%	80%	80%	
	TARGET	90%	90%	90%	90%	90%	90%	90%	
	BETTER THAN TARGET	100%	100%	100%	100%	100%	100%	100%	

Note: CSI is measured at the end of each control period. An annual estimate is under development.

Key stakeholder priorities

Below is a summary of key stakeholder priorities identified through our engagement with stakeholders during the development of the route plan. Further information including the approach taken to engage with our stakeholders can be found in Appendix A.

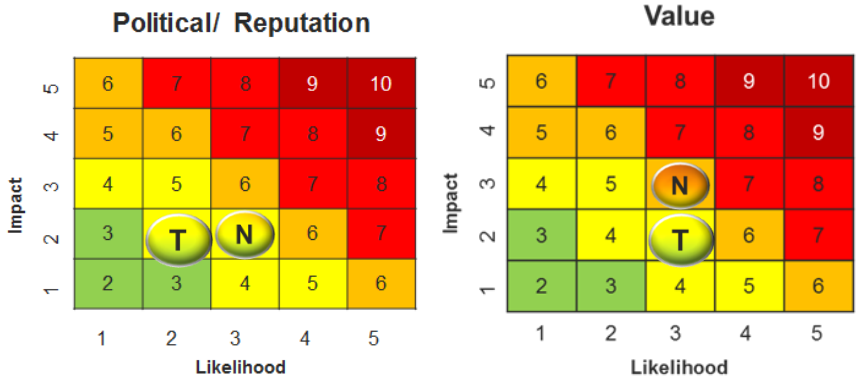
Key stakeholder priorities	Response
Need to prioritise Western access to Heathrow Airport	This remains an enhancements choice of funders, but we have revised our route strategic plan to make this option clearer. We will continue to support stakeholders to secure funding for this scheme
Route vision needs to include more on the environmental benefits of rail	The route vision has been revised to reflect stakeholder feedback
Delivery of capacity improvements to time and budget	This will not form part of the route strategic plan but will be included in the enhancements delivery plan. The route scorecard includes tracking of enhancement milestones and financial performance of enhancements. The route governance structure had been improved to focus attention on achieving timely delivery.

Reduce journey times (through infrastructure intervention)	This cannot be addressed under current renewals and maintenance plans except in very limited circumstances. Investments opportunities are subject to funding. Joint working with Great Western Railway has identified line speed increases that can be achieved through the renewals schemes already included within the plan
Address pinch points and other asset issues	This cannot be addressed under current renewals and maintenance plans except in very circumstances. We have set up a renewals planning review group to identify incremental enhancement opportunities
Minimise delay per incident	Joint strategies with each TOC allowing sensible targets to be set and realistic plans to be implemented. This is an industry challenge and not one which NR can solve on its own. We will work with our TOCs and FOCs to reduce
Invest in stations	Our asset policies target the maintenance of asset condition at current levels. An Alliance workstream has been set up with GWR to build an aligned approach to business development to dive investment in our stations. Our core plan included the renewal of the roof at Bristol Temple Meads which will improve passenger experience at this station.
Need to do incremental enhancements when doing renewals	We have set up a renewals planning review group to identify incremental enhancement opportunities. This group has identified opportunities within the route plan which are being developed for delivery in CP6

6.2. Sustainability & asset management capability activity prioritisation

Summary of objectives	We will adopt and embed a structured continuous improvement approach to developing and delivering our enhancement, renewals and maintenance asset management plans to provide a safe and reliable railway. This will be managed through the DRAM organisation via regular reviews and progress monitoring

No.	Key objective drivers (constraints, risks and opportunities)	What we plan to do	Owner	Timescale (start/ finish)
1	Opportunity: Implementation of Risk-based Maintenance regimes	RBM will help us to make a step change in the way we manage asset reliability and asset whole life cost and allow us to safely maximise asset and reliability. This means moving from time based fix and find regimes to intelligent proactive functional based regimes.	DRAM & COO	Plain line Track – December 2019 Other RBM – Throughout CP6
3	Opportunity: Demonstrate compliance with ISO 55000	Undertake a gap analysis of the route to the requirements of ISO 55000 and complete subsequent actions to achieve compliance during CP6.	DRAM	By end 2021
5	Opportunity: Intelligent Infrastructure	Work with STE to develop and adopt the Intelligent Infrastructure programme products to help us to get the most out of our assets, manage assets and work in the best way and to manage asset knowledge to support better exploitation.	STE	Through CP6
6	Risk: Inadequate governance of asset data	Implement a route asset data improvement programme. The route has already appointed a route asset data manager who will be accountable for implementing improvements to asset data governance.	DRAM	By end 2021
7	Risk: Asset data is not mature enough to be used effectively to identify at risks sites to enact a predict and prevent intervention methodology	Implement improvements to remote condition monitoring equipment and data quality in FMS and Ellipse to facilitate a predict and prevent interventions	DRAM	By end 2020
8	Risk: Asset Management (AMEM) score deteriorates due to cost constraints enforcing decisions that do not realise the maximum benefits from routes asset	Increase asset management training and use tools such as those proposed by the Intelligent Infrastructure programme to optimise asset management decision making	DRAM	By end of CP6



Summary of risk outcome
We aim to maintain asset sustainability and to manage the risk to asset condition. A failure to implement the risk-based and predict & prevent maintenance strategies will place this achievement at risk. Failure to implement new technologies will hamper our efforts to maximise the whole life cost of assets through implementation of an effective and mature asset management approach.

6.3. Asset by asset key outputs

Asset area	Intervention strategy
Cross-asset prioritisation and maintenance / renewals balance	In developing the asset strategy for CP6 the route has adopted an approach of targeting the inclusion of a number of strategic objectives, notably to fund the renewal of the roof at Bristol Temple Meads (identified as a critical renewal activity for CP6 due to the condition of the existing asset) and to focus on greater use of refurbishment and mid-life intervention volumes to allow a wider number of assets to receive an intervention while delivering value for money. Funding for the conversion of track circuits to axle counters between Paddington and Airport Junction has been prioritised to improve reliability and train performance. The share of funding between assets has been informed by historic splits, modified to consider structural changes, notably in the electrification and plant asset group. Reactive maintenance expenditure has also been increased to reflect where renewals items have been deferred, notably in buildings, structures and earthworks. Increased reactive volumes for track have also been included through the activity-based volumes set for our maintenance delivery units. The overall asset strategy has therefore set on a total expenditure basis, with operational and capital funding reviewed and rebalanced accordingly to achieve the best possible outcome for the railway system while remaining within our final determination settlement. The planning of renewals delivery in CP6 has been carried out using an integrated access planning approach which has considered the access needs of maintenance and all asset renewals. The One Plan is actively managed and has been used to inform the phasing of work during the control period. It has also enabled the use of available access to be maximised by coordinating several asset interventions into a single access window. The One Plan now forms a key part of our business planning and control.

Track	The track plan is firmly targeted towards safety and reliability. The number of sites needing an unplanned Temporary Speed Restrictions (TSR) peaked at 29 during the final year of CP5. Most sites were related to changes in track geometry reducing the overall track condition from external influences, including the effects of an exceptionally hot summer, thereby presenting an increase in safety and reliability risks which are actively managed through business as usual processes. CP6 interventions are targeted towards similar sites with quantifiable risk to improve performance in the future. **Short Term (CP6 Years 1 and 2):** Key S&C renewals in Year 1 include Cogload Junction, one of only three locations on the Route with very long switches. The junction at Gloucester West will be renewed, thereby removing a long standing speed restriction that has been in place to mitigate risks in the area. At Christmas 2019, the third and final stage of the S&C renewal at Southall East Junction will be completed, a significant milestone as it will remove the last high-speed crossover with timber bearers between London and Bristol. Uffington crossovers between Didcot and Swindon will be relayed in Year 2. This is the first renewal of this type of main line concrete bearer layout on Western, installed in 1993. Our internal project delivery team, Works Delivery, will be the primary deliverer of plain line track renewals in the Plymouth DU area, Infrastructure Projects (IP) covering the rest of the Route. Refurbishment is predominantly by Works Delivery although some S&C refurbishments will be carried out by IP. The retendering of IP's plain line delivery contract will conclude in Year 1 with mobilisation of the new contractor. This will inevitably cause some uncertainty and some cost impact in delivery of efficiencies is forecast although the plan has been developed with the contract change in mind to reduce any impact that it may have. The new contract is expected to deliver £5m worth of efficiencies during the control period. Commencement of Elizabeth Line services will see a change in operating context between London and Reading. An effect of this will be changes to the train plan and possession opportunities. One example is the handing back of weekend track renewal sites for a period on Sunday afternoons. This practice is used on West Coast main line but is new to the Route, bringing with it challenges and productivity risks. Advanced planning is underway to minimise this risk. Train mounted technology will play a growing role in track during CP6. Besides accruing benefit from reduced visual inspection of rolling contact fatigue, the Eddy Current system will allow scoping of sites suitable for rail milling later in the control period. This will realise capital expenditure savings by enabling rail refurbishment rather than having to replace the rail. Data from the Unattended Geometry Measurement Systems fitted to the IET and Class 345 fleets is expected to be widely available in early CP6. Work via the Intelligent Infrastructure programme is expected to enable a change in the track maintenance regime using this data. The Track Integrated Geometry Engineers' Report (TIGER) system is also due for deployment in early CP6 which will improve the management of rail defects. **Medium Term (CP6 Years 3 to 5):** Year 3 is the busiest year for the CP6 High Output programme. Works include several sites on the Didcot to Banbury route which have aging ballast and sleepers that requires full renewal to improve reliability and performance. There is a large volume of conventional renewals on the West of England route, especially in Years 3 and 5. Access for these works is

	progressing through the engineering planning process S&C at Stoke Gifford West will be relayed in Year 3, requiring working around IET stock moves on and off the new Hitachi depot. We will use our strong alliance and relationship with Hitachi to minimise disruption to passengers. In Year 4, S&C at Newbury East and Newbury Racecourse will be relayed. Year 5 is a peak for S&C volume including 28 units at Bristol West during Christmas 2023. There will also be some important renewals at Reading West and Kennet Loop. A cornerstone of the CP5 track plan was to improve asset condition between London and Reading in advance of Crossrail trains through a programme of conventional and high output renewals. Delivery was impacted by the significant level of enhancement work, both Crossrail and Electrification, resulting in 37km of track on the relief lines still requiring renewal. Plans are being developed to address this in late CP6. The new activity of rail milling is planned in Years 3 to 5. Scope will be defined from eddy current testing carried out in the early years of CP6 as described above. **Long Term (CP7 Years 1 and 2):** The CP7 plain line programme will continue to target life expired components. Sleepers affected by Alkali Silica Reaction are expected to be an influence on the programme with CP6 tonnage increases likely to adversely affect deterioration rates. Removal of pre-76 rail from high speed main lines will continue to be a prioritised. Replacement of wooden bearer S&C on main running lines will continue further west of Bristol and on the Bristol to Birmingham corridor. Paddington to Ladbroke Grove S&C will require works beyond the limited CP5 refurbishments achieved due to the increase in tonnage and number of services that will be seen in CP6.

Signalling	The signalling asset is entering a new phase following extensive enhancement and renewal works over the past 10 years. Focus now moves to areas away from the mainline that require intervention in the form of life extension works. Now, more than ever following the enhancement works, the technological range within the signalling asset is significant and ranges from mechanical lever frame signal boxes through to the latest digital traffic management systems. **Short Term (CP6 Years 1 and 2):** In the first two years of CP6 the focus of the signalling asset is on the replacement of the current train detection in the Paddington to Airport Junction (0mp to 12mp). This has been developed to a GRIP3/early GRIP4 position in CP5. Delivery of this project is key for the performance of the route with the introduction of the Elizabeth line services and additional operations by GWR. Targeted interventions are also planned for Exeter and Westbury Panel Signal Boxes, where the condition of the assets installed in the early 1980s has started to deteriorate. The focus of these interventions are signal structures, cables, equipment housing, targeted control panel components and train detection. The data transmission system in the Westbury area are also going to be renewed to improve reliability of the assets. The European Train Control System (ETCS) deployment in the Paddington to Airport Junction (0mp to 12mp) will continue into CP6. The second phase of this programme will commission in 2020 with the third phase following before the conclusion of CP6 to bring the system into full operation. Additional maintenance money is allocated to support increased maintenance and fault response, notably for the Paddington – Reading section which will see additional train services as a result of both the Elizabeth line and enhanced Intercity Express Programme timetable changes. A risk-based maintenance programme is underway to review our current approach to signalling maintenance to identify and implement the changes needed to support the new train service and to maintain asset reliability as much as possible. **Medium Term (CP6 Years 3 to 5):** The implementation of plans to overcome the Great Western -Automatic Train Protection (GW-ATP) system obsolescence will look to build upon feasibility studies undertaken in CP5 and further studies in the early part of CP6, this will align with the Digital Railway (DR) policies as appropriate but will focus on the needs of the route. Targeted interventions are planned in the Plymouth/Cornwall and Gloucester control areas. The Plymouth/Cornwall works will look to maximise the available funding for continued development of the area. The interventions will build upon the capacity improvement works delivered in CP5 that have delivered train service frequency improvements for passengers. There will be a focus on signal structures, cables and obsolescent equipment. With a potential minor re-signalling scheme in the Lostwithiel area, this is subject to a feasibility study being concluded in CP5. The Gloucester area intervention will focus on cable and wiring condition, train detection performance and obsolescence of components.

	The Worcester area will have a targeted intervention that will build upon the CP5 Malverns life extension project, this area is planned to undergo a boundary change at the commencement of CP6 so will be delivered by the London North Western (LNW) route. **Long Term (CP7 Years 1 and 2):** Beyond the end of CP6 there are plans to commence the development of the re-signalling in the Plymouth/Cornwall and Gloucester areas. These projects will develop as appropriate from the delivered life extension schemes in CP6. These schemes will align to the DR policies available at the time of development and potential alignment of any ETCS roll-out programme. The GW-ATP obsolescence plans developed and delivered in CP6 will continue into CP7 as appropriate.

Electrification and Plant	The overall condition and risk level of the Western Route E&P portfolio will be sustained in CP6 at the CP5 level. As the majority of the Overhead Line Equipment (OLE) system will either be newly constructed or substantially upgraded in CP5, E&P renewals focuses mainly on power distribution. However, our plans include the conversion of 20 head-spans to enhance safety in stations in the event of a dewirement. Works planned also include improvements to OLE electrical clearance at several station platforms in the Thames Valley in line with current policy. The continuation of campaign changes started in CP5 will continue on the existing infrastructure in CP6. The largest challenge in CP6 will be taking on, running and maintaining new OLE assets across the route and the learning that all parts of the organisation needs to go through to enable this to be a success **Short Term (CP6 Years 1 and 2):** CP6 years 1 & 2 will see the start of the deployment of 650v signalling power supply cable renewals in the Westbury signal-controlled area. The Taunton area signal power supply cable renewal and system resilience improvement outline designs will be produced. Throughout years 1 and 2 signalling uninterruptable power supply (UPS) system life extension work will be proceeding. Hot Axle Box detector renewals, point heating system renewals and DNO renewals will all be launched during Years 1 and 2. The development and roll out of the new pantograph monitoring system at strategic locations across the route will be on going to allow the real time identification of any faults arising from damage to the infrastructure or train pantograph. Outline designs will be produced for the replacement of Long and Crawford high voltage non-traction switchgear, which is subject to operating restrictions, within Penzance, Plymouth, Bristol and Reading. Outline designs will also be produced for OLE head-span replacements and electrical clearance improvement work in public areas for compliance with the Electricity at Work regulations. OLE campaign changes on the 0-12 miles of OLE will continue from CP5. Principal power supply point renewal outline designs for the routes main signalling control centre will be developed to renew life expired equipment and further enhance the power resilience at the site. **Medium Term (CP6 Years 3 to 5):** Years 3 to 5 will see the completion of the signal power supply cable renewals in the Westbury area. The Taunton area signal power detailed designs will be produced, and the renewal of signal power cables and resilience improvement work will be delivered. Signal power supply improvements for compliance with the Electricity at Work Act (resulting from SIN119) will be installed and commissioned between Totnes and Penzance. Signalling UPS life extension work, Hot Axle Box detector renewals, point heating system renewals, and DNO renewals will all be completed. The new Pantograph monitoring system is scheduled for completion by year 3.

	Long and Crawford high voltage switchgear replacement, OLE head-span replacements and electrical clearance improvement work is all planned to complete by year 5. Principal power supply point renewals at TVSC will be installed and commissioned within CP6. OLE campaign changes on the MLN1, between 0-12 miles, OLE will be concluded. **Long Term (CP7 Years 1 and 2):** Looking into CP7, planning is starting for the renewal of UPS systems that had life extension work carried out in CP6. Signal power supply cable renewals will continue driven by asset condition and age.

Structures	**Short Term (CP6 Years 1 and 2):** Structures reliability is presently in line with target for CRI. Funding provision in CP6 requires activity to be primarily focussed on maintaining capability of assets for the loading, and intervention on poor condition assets to maintain safety and reduce likelihood of impact on performance. **Medium Term (CP6 Years 3 to 5):** The CP6 plan has been developed using Engineering knowledge and a number of asset tools; primarily the Structures Condition Marking Index has been used at both asset and element level to identify under and over bridges requiring more significant interventions. The Structures dashboard has been utilized to apply policy and support engineering judgement in defining the preferred works at individual sites, these requirements will be further developed throughout the lifecycle of each scheme. Assessment driven works have also been included within the CP6 plan, with the assessed capability work bank expected to be refined through the control period as more data is available from assessment reports. Further management tools relating to scour risk and hidden critical elements have also been used to support the work bank planning process in line with asset policy. These work banks are expected to mature during the control period as higher risks sites are targeted and more information gathered on the potential issues. The CP6 One Plan for Western Route has necessitated some changes in the programme of works to align with access and an increased opportunity to realise efficiencies from joint track access. Our delivery teams have also benefitted from a 5-year bottom up plan to enable early identification of road access and utility interfaces. Work activity will drive lowest implementation cost, and move away from lowest whole life cost, with less activity associated with painting and waterproofing. Overall, our overbridge works shall be targeted at maintaining bridge capability to Network Rail's liability, while tunnel works will target areas of the lining to enhance the overall condition Minor portfolio spending on culverts, retaining walls and coastal & estuarine defences will address known defects and performance issues that affect the operational infrastructure, thus restoring the capability to a suitable level with minimal spending per asset. Minor works provision has been set against the current spend profile, at approximately £8m per year. Additionally, funding has been used to allow for a more reactive nature to emerging asset deterioration and defect rectification. Further funding has been allocated to manage specific risk associated with potential hidden shafts in tunnels, vehicle incursion at both bridge sites and sites parallel to the railway, and voided structures. **Long Term (CP7 Years 1 and 2):** The CP7 work bank is being developed based on Structures Condition Marking Index scores and Asset Engineer judgement. The first two years have been populated based on the current structures policy. It is expected that the current CARRS system (a register of civil engineering assets) for managing assets will be improved upon in the first few years of CP6 and this will improve asset knowledge and enable a more holistic approach to structural interventions.

Geotechnical	The overall condition and risk level of the Western route earthworks portfolio will be sustained in CP6 at the CP5 entry level, such that the asset base will not degrade in either condition or risk; as measured by the Earthwork Condition Score and the Risk Score (Composite Reliability Index, CIV185) respectively. Earthwork interventions will continue to be prioritised based on the highest safety risk combined with line criticality. **Short Term (CP6 Years 1 and 2):** Currently the highest risks posed to the operational railway by earthwork assets is from assets in areas that have been previously identified for renewal but have not been completed through the CP5 workbank. As such, sites at Wootton Bassett Cutting, Studley Grange Cutting, Langport Embankment and Doublebois Embankment, will be completed in precedence of other sites in the early part of CP6 by IP. Alongside these renewal sites, in line with CP6 earthworks policy a greater proportional application of the lower cost interventions of refurbishment and maintenance will produce the volumes required to maintain the portfolio condition. **Medium Term (CP6 Years 3 to 5):** Packages of refurbishment works will be delivered through Works Delivery targeting discrete issues, such as embankment scour, rock cutting de-vegetation / scaling, burrowing remediation and netting maintenance. This mechanism has been proven through CP5 and found to be effective, in terms of cost and asset improvement. Review processes, undergoing lessons learnt workshops have given continuous improvement year on year and this will continue through CP6 to meet the efficiency challenge. Packages of work have been remitted, authorised and agreed in a priority basis for years 1 & 2 allowing for flexibility to deliver intervention volume in the most efficient way when external factors force re-programming. Years 3 to 5 will be developed following the ongoing inspection and evaluation processes currently utilised with asset data and knowledge improving annually. The use of better decision-making tools (Civils Strategic Asset Management System), asset monitoring through automated monitoring equipment (Remote Condition Monitoring & Earthworks Failure Detection) and a continued collaborative relationship with our Delivery Partners (IP, Works Delivery and the Maintenance Delivery Units) will be progressed in CP6. These proactive measures will continue to be adopted to ensure targeted interventions are completed prior to reduction in level of service occurring. **Long Term (CP7 Years 1 and 2):** Funding has been assigned to develop current known unconstrained sites to ‘approved for construction’ designs (GRIP2-5). This will allow for smoother and more efficient renewal delivery if the asset condition degrades quicker than expected, and also provides available renewal work bank items where track access timescales aren’t so much an issue. This approach will also provide foundations for moving into CP7 with the asset portfolio requirement to be maintained with a large aging asset base and low percentage of intervention. Western route is committed to reacting to the challenges of climate change to ensure the long-term resilience and sustainability of all assets. All CP6 earthwork renewal schemes shall fully consider the potential effects of climate change and, where reasonably practical, incorporate long-term resilience measures to mitigate the effects of adverse weather events into scheme designs. Extensive works to provide resilience at Dawlish and Teignmouth are provided as an investment option.

	Although small in volume and cost, Mining represents a significant risk to railway operations, notably in Cornwall due to the historic undocumented nature of mining mineral veins. In CP6, as in CP5, detailed studies through desktop and ground investigation (and subsequent intervention works, where necessary) will target Mining assets deemed to pose the highest risk to the operational railway. In the long term these will be based on outputs from the centrally developed Mining Risk Rating System (MRRS) tool. Western route will continue to work collaboratively with the STE Mining team to ensure risks posed by Mining assets are mitigated in an appropriate manner.

Drainage	**Short Term (CP6 Years 1 and 2):** Five track drainage renewal projects will be completed in the early part of CP6; located at Kensal Green, Parson Street, Melksham, Somerton Tunnel and Wanstrow. The primary driver for the renewal intervention works at these sites is the current poor structural and / or serviceability condition of the drainage assets. In addition, there is a significant programme of track drainage refurbishment activity planned for the early part of CP6, focussed between Somerton Tunnel and Newbury. This work forms part of a wider CP6 programme which covers from Newbury to London Paddington via Reading. External stakeholder relationships will continue to be developed. Working in partnership with North Somerset and Axe Brue and Parratt Internal Drainage Boards (IDBs), Network Rail will maintain up to 40 culverts each financial year. In addition, Network Rail will continue to work closely with the Environment Agency, water utility companies and the Lead Local Flood Authorities across Western route to realise mutual benefits for both Network Rail and our external stakeholders. As part of our commitment to developing relationships we are now members of the Association of Drainage Authorities. **Medium Term (CP6 Years 3 to 5):** Track drainage renewal works will be completed at Cheltenham Spa, Charlton Tunnel, Lawes Bridge and Clifton No.2 tunnel in CP6 years 3 to 5. Track drainage refurbishment activities will focus on assets between Newbury and London Paddington. This is to align with access opportunities defined by the One Plan. There are four outstanding enhancement items due to be delivered by The Greater West Project via IP Track in CP6, these include track drainage renewals due to the lowering of track in CP5 at Green Lane (Near Chippenham), Dauntsey, Newton Road (Near Bath) and Huntsmill (Near Royal Wootton Bassett). All culverts noted in CARRs as “Unlocated” will be identified and inspected by the end of CP6. **Long Term (CP7 Years 1 and 2):** Strategic plans for the longer term include: • Access steps or suitable safe means of access to be provided to all culverts, aqueducts and syphons by the end of CP7. • Installation of telemetry on targeted high priority trash screens. • Installation of a permanent drainage system at Broadmeadow House, Teignmouth. For CP7 targeted interventions between Royal Wootton Bassett and Pilning will be completed. Refurbishment of the 6ft brick arch culvert in Chipping Sodbury Tunnel will be finished by the end of CP7. Furthermore, a flood resilience scheme at Flax Bourton will be completed in CP7.

	The workbank (renewals and refurbishment) and associated funding for CP7 shall be developed using the criteria below: • Priority 1 Items – Interventions from the deferred renewals register & Safety Improvement Measures. • Priority 2 Items – Renewal requirements from all refurbishment activities completed in CP6. • Priority 3 Items – Discretionary interventions, based on condition data and risk assessments.

Off Track	**Short Term (CP6 Years 1 and 2):** In the first two years of CP6 Western route will continue with the large-scale vegetation clearance programme which was started in CP5. This will increase compliance percentage with the current vegetation management standard focussing on mainline areas west of Swindon and down into Cornwall. A route wide tree survey will also be completed in Year 1 and 2 of CP6. Resourcing within the maintenance delivery organisations will increase in CP6, with increased staffing to deliver a more robust and sustainable approach to Off Track inspection and maintenance. Maintenance Annual Plan volumes that are agreed with the delivery units to be delivered each year will therefore reflect the level required per year to maintain compliance to internal standards. Off Track work in CP5 has shown that additional resources are required for the routine management of off track assets. As a result an additional 22 members of staff will be provided to specifically focus on off track works. **Medium Term (CP6 Years 3 to 5):** Western route will continue to manage trees on a risk-based approach improving competence of staff through continued tree awareness workshops and engaging with Network Rails STE team on the competence matrix update for Off Track. Fencing renewals funding (£1.7m p.a.), delivery and volumes are aligned and due to be delivered through Works Delivery in early CP6. Road Rail Access Point surface renewals, and access point refurbishments will increase from CP6 Year 3 onwards. **Long Term (CP7 Years 1 and 2):** In the longer term, through CP7 the route will continue with vegetation management and aim to become compliant with the updated vegetation management standard (NR/L2/OTK/5201/02) by the end of CP7. Western route is currently at 60% compliant with the current standard (NR/L2/TRK/5201).

Buildings	Throughout CP6 the buildings asset management team will manage the operational building assets as well as continuing to learn and develop its facilities management capability. The Buildings CRI measure has had its criteria for CP6 amended which will enable greater focus on asset issues but results in a lower target level of faults each year. CRI / Percentage Asset Remaining Life (PARL) is expected to remain level throughout the control period as most of renewals spend is directed to the major intervention at Bristol Temple Meads alongside the franchised estate lighting and rewire programme leaving the financially enhanced emerging works programme to manage the rest of the operation property estate. **Short Term (CP6 Years 1 and 2):** The first two years of CP6 will see development of the scheme to renew the roof at Bristol Temple Meads. The blockade in December 2020 will install the crash deck at the station to allow the renewal work to commence on site. A full rewire of the station will also commence on site in late 19/20. The franchised station lighting and rewire programme will also commence and run throughout the control period covering a total of 37 sites with 12 in the first two years. An M&E package will be delivered at the Bristol St Philips Marsh LMD consisting of lighting, power & fire alarm renewals. At Paddington we will be renewing 5 lifts & 1 escalators as well as delivering roof & façade repairs to MacMillan House. Within facilities management, refurbishment work will be completed at office locations. The first two years of our 5-year minor schemes work-bank will commence to cover our emerging works and deferred renewals mitigation works. **Medium Term (CP6 Years 3 to 5):** Throughout the remainder of the control period we will deliver the 2 major schemes at Bristol Temple Meads as well as completing the franchised station lighting and rewire programme. At Paddington, a further 6 escalators will be renewed. A series of depot plant schemes will be delivered which includes renewing the depot protection system at Bristol St Philips Marsh and Plymouth Laira, fuel tank replacement at Penzance Long Rock and Bristol St Philips Marsh as well as replacing the wash plant renewal and wheel lathe at Bristol St Philips Marsh. There will be 3 canopy refurbishments and 4 footbridge refurbishments. The final three years of our 5-year minor schemes work-bank will be completed. Continuation of the accommodation upgrade programme for the NR non-franchised estate to meet the modern requirements for our colleague facilities. This will address a period of under investment and is reflective of our route vision commitments to our people and our communities. **Long Term (CP7 Years 1 and 2):** Looking into CP7 the main significant renewal identified at this early stage of planning is a full station rewire of Paddington station which will be a major intervention and will need to be funded accordingly. Continuation of the franchise station lighting and rewire programme will be required to ensure the assets remain safe and fit for an operational railway. Maintain the investment in the accommodation upgrade programme for the NR non-franchised estate to meet the modern requirements for our colleague facilities. CRI/PARL will be maintained at a steady state with reliance on an enhanced minor works programme used to manage the operational estate.

Level Crossings	**Short-term (CP6 years 1 and 2)** Within our overall safety fund we have provision to be able to commence implementation of some technological improvements, such as overlay MSLs. We have commenced development work at a number of sites, for commissioning in the early part of CP6. A minor works fund has been set aside to target both planned and reactive minor works to passive level crossings. This is a continuation of the fund set up in CP5 which has proven crucial in delivering safety improvements at footpath, bridleway and user-worked crossings, and this will be utilised in the early years of CP6. The first two years of CP6 will also see early- to mid-stage GRIP activity for deliverables in the medium term (see below). We will continue our programme of level crossing closures focusing on the rationalisation of footpaths and bridleways, and the buy-out of user-worked crossing rights-holders. Our programme of narrative risk assessments and asset inspections will also continue, identifying closure and enhancement opportunities with schemes progressed under the oversight of the route level crossing steering group, subject to suitable cost-benefit analysis. Benefits of these activities will be circa 60% quantified risk reduction at MSL sites, and 100% risk reduction at crossings we successfully close. **Medium-term (CP6 years 3 to 5)** We have ringfenced funding to develop, progress and complete the closure of Tackley bridleway level crossing, located on a key section of the railway north of Oxford, work on which has already begun with anticipated delivery in the medium-term. In addition, four open level crossings will be renewed as the ABCL type, adding barriers, yodelarms and wigwags at sites which have been subject to near misses and collisions in the past. Full, conventional renewals will take place at a further 19 level crossings around the route, bringing crossings up to modern standards and extending asset life. This will encompass a range of crossing types included MCBs, AHBs and MSLs. Development work in the short-term will also see the delivery of the removal of passive crossings on 125mph railway on Western Route. There are currently five footpath or bridleway crossings in this category, and the latter years of CP6 will see the closure, diversion and / or bridge replacement of these crossings. Delivery of MSL upgrades and route-led closures will continue from the short- into the medium-term also, alongside our minor works activity. Benefits of these activities will be: • 90% risk reduction at four open crossings being renewed as ABCL type; • 100% risk reduction at Tackley, one of the Route's top 10 level crossings by FWI risk and the only crossing providing sole access between two platforms on a two-track, high-speed railway on Western; • 60% risk reduction at two footpath crossings being renewed as MSL type, with the same risk reduction applied to any other crossings identified for fitment of overlay MSL through the safety fund; • Between 5-10% risk reduction at passive crossings where civils improvements take place using the minor works fund.

	Long-term (CP7 years 1 and 2) Activity in the long term will continue to be risk-driven and is likely to focus on user-worked crossings with telephone protection and level crossings protected with whistle boards. The development of enhanced MSL, AHB+ and other technologies throughout CP6 will factor into our bids for regulatory settlement in CP7. The route's programme of minor works and closures will continue.

Telecoms (NRT)

As an asset owner in its own right, Network Rail Telecom has developed the telecoms submission for Western as part of their overall national submission.

- Budget concentrated to address concerns with ageing telecoms equipment and power supplies to support assets with earlier FTN transmission roll-out
- Budget allocated across all of the Station Information & Security Systems (SISS) assets on Western route and a reactive minor works budget allowance included for cable and route renewals
- Budget targeted at level crossing improvements (including migrations to Network Rail services to suit performance), telephone concentrators and voice recorders. Some limited budget on DOO assets

Sustainability

Sustainability targets will be achieved by delivering against the target investment plan in keeping with targets set by ORR, and avoiding overspend to stay within budget. We will identify the core cost in the delivery of telecoms assets with attention to station information and surveillance systems. We will target efficiencies in technology and delivery, and drive lower unit rates and whole life cost reductions to deliver increased volumes within a sustainable budget for CP7.

Western	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
CP6 entry (forecast)	83	74	66	58	49	47	39	31	25	39
CP5 entry (forecast 2013)	78	72	65	59	54	48	42	37	58	55

The average percentage life remaining sustainability measure captured within the Telecoms DST shows that current CP5 exit is less than forecast but this position is recovered by the end of CP6. SISS CIS management, GSMR BTS's, DOO CCTV and Mirrors are key factors in the lower life remaining for CP6.

Safety

To maintain safety performance at the highest level affordable within CP6, we will monitor changes in financial requirements and manage the asset portfolio in accordance with established safety risk management principles. Delivering a reactive infill programme in CP6. Roll-out of GSM-R cab mobile fitment V.4 already in progress and there shall be no increase in risk of failure to meet LTIFR, by monitoring accident and injury rates, and to further improve our safety culture and identify opportunities to improve safety performance throughout the telecoms estate.

Asset Performance at the end of CP6

Performance

The investment identified over the control period is designed to maintain the CP5 exit figures for train performance. There are opportunities to drive further performance improvements however investment is primarily targeted at maintaining systems' stability utilising an efficient level of investment. The migration of legacy and third-party services onto a single network will support performance through network resilience and supportability.

The Telecom Asset Management Policy provides guidance on the approach to asset resilience and associated criticality. This guidance has been reflected into the Telecoms Decision Support Tool (DST) and the tool has been utilised to drive the renewals work bank. The key elements that have been prioritised within the plan are summarised below:

- Power support systems have been prioritised to maintain operational continuity in the times of national operator failure. A battery strategy is in the process of being developed to drive power support in line with system and geographical needs. This will drive a sustainable position for this asset base
- Operational telephony will progress with a combination of site renewals in line with the development of a central core that will facilitate flexibility, efficiency and resilience
- Sustained investment into lineside infrastructure and level crossing telephony will deliver improvements to availability of the service and support resilience. Known hotspots will be targeted alongside the evaluation of the complete system and support at level crossings
- The migration from third party services to our own telecoms infrastructure will be undertaken to deliver greater resilience at level crossing locations
- The migration from legacy services to our own telecoms infrastructure will be undertaken to drive to a single supportable, scalable and sustainable network environment.

Maintenance delivery

We are experiencing unprecedented change in terms of requirements, access restrictions and technology development within the telecoms industry which subsequently pose significant maintenance challenges.
These challenges require the adoption of new maintenance approaches, changes within processes, organisational alignment, tools and training. We will use lean based techniques to develop new maintenance delivery methods based upon lowest whole life cost for each asset type.
The maintenance and renewal strategy will be based on a predict and prevent regime with effective team working with all stakeholders. At the heart of this strategy are the people and processes and the development with route maintenance teams is key. We have a three-strand approach to delivering our maintenance strategy:

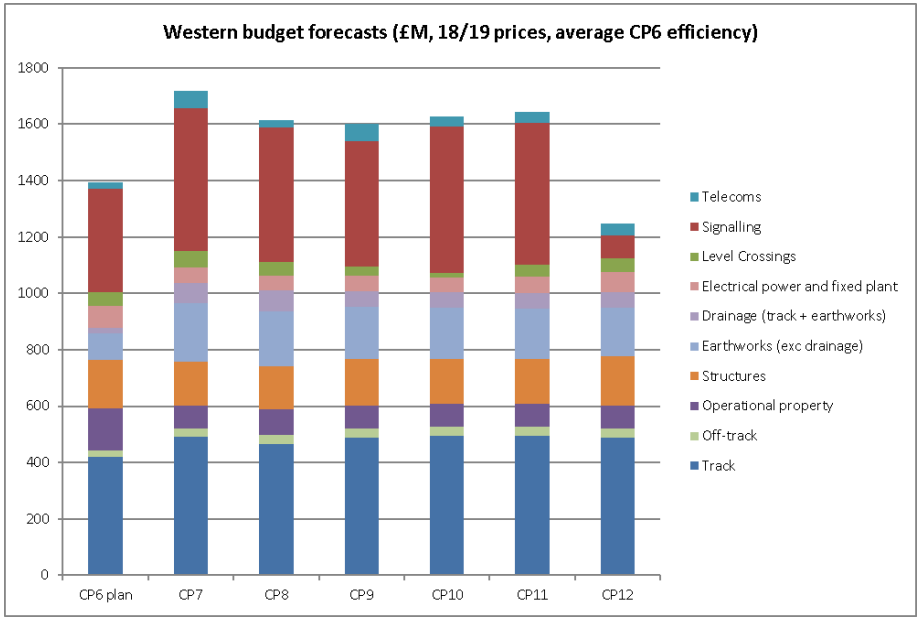
- Task standardisation and improved collaborative working
- Reliability centred maintenance and renewal regimes based on improved asset knowledge and intelligence
- Use of technology to predict faults and to ensure deployment of the right solution for each task.

	Route policy Our CP6 strategy continues to focus on providing the route with telecoms capability, infrastructure and services which enable the safe, secure and efficient operation of the railway, and also increasingly focusses on the growing importance to deliver better passenger connectivity. It also supports Network Rail's strategic business plans such as delivering an always connected digital railway for customers, passengers and lineside neighbours. It is our intention to continue driving service-based outcomes rather than individual asset performance. We will support ETCS infrastructure schemes including ensuring enabling telecoms are delivered to meet enhanced ETCS requirements for Digital Railway. Our strategy has been designed to help our key customers (the routes) to provide more reliable and available services to their customers, the Train Operating Companies (TOCs), Freight Operating Companies (FOCs) and ultimately, passengers. Our strategy also caters for the unprecedented demand for communications connectivity along the rail corridor which needs to be managed consistently to ensure best value is achieved for everyone. ***Interventions*** The Telecoms Asset Management Policy provides clarity of direction on the Asset Intervention Strategy, a summary of this is contained below. Asset Intervention Types Three key intervention types are used to provide service to our customers, mitigating the effects of the asset's degradation and failures: • **Monitor** • **Inspect (predict) and maintain (prevent)** • **Replacement and renewal** • **Monitor** - Check that equipment meets the defined performance thresholds by checking the asset by automated management systems or direct observation. If the performance threshold is breached or failures are detected, secondary intervention or remedial action such as rectify or periodic service is required to restore service. • **Inspect (predict) and maintain (prevent)** - Check that equipment meets the defined performance thresholds by periodic visual and physical activities including tests and measurements, restoring (service) performance to defined thresholds if within expected levels. Maintenance can be at hardware or software level. • **Replacement and renewal** - Replacing or renewing components or systems with serviced or repaired spares or new purchase. Three types of renewal or replacement are available: o Full system renewal generally comprises the system itself and the supporting equipment, containment and structures. Project management, design, testing and commissioning are included in the package. o Targeted renewal is the renewal/replacement of a component part of a system such as a monitor/display or camera where there is a little or no requirement for design work and minimal testing and project management. o Maintainer swap-out is replacement of equipment as part of the normal service/system rectification activity, generally using the Telecommunications Maintenance Testing & Failure Investigation (TMT&FIP) Process.

	Renewals are supportive of known operational changes and implement technologies that will form enablers to many of the requirements for the route projects delivering operational change. A summary of the key operational asset groups are summarised as follows: • Transmission will be provided by a single supportable network by the close of CP6. Legacy transmission systems will be migrated over the duration of the control period and where operational efficiencies can be identified, third party supplier provisions will also be migrated to the single network • GSM-R will continue to be the single operational radio network in England and Wales. Scotland will continue to utilise a mix of GSM-R and RETB for track-to-train communications • Driver Only Operation (DOO) despatch systems will be renewed to support the operational requirements of the routes and associated TOCs. The introduction of new rolling stock with on-board systems is a key consideration in the creation of the core investment scenario • Level crossing telephony forms a key part of the core scenario with a plan to maintain asset renewals and support the development of product/technology improvements. • Enabling telecoms for ETCS infrastructure schemes for FTN and GSM-R will be delivered to meet enhanced ETCS requirements

Asset data	The route has been engaged with a number of CP5 asset programmes; notably we were at the forefront of Asset Data Governance as the pilot for the country. We successfully upgraded to Ellipse 8 and are involved with the exploitation of Ellipse working group. Throughout CP5 the route is implementing, utilising and embedding ORBIS and Asset Information Services systems to maximise the benefit opportunities they bring. Recognising the importance of data and treating it as an asset in its own right, the route identified a need for a new data organisation which was designed, consulted and created on behalf of all routes and has been deployed in Western. As we exit CP5 and move into CP6 work will continue to improve our asset data quality, including completeness, across the seven asset disciplines. New trains will introduce a range of sensors that will analyse various parts of our infrastructure and provide near real time information about our Assets. Tools from ORBIS will continue to be embedded and the Intelligent Infrastructure programme will provide additional new tools to aid decision making. The data team will take data from the various sources and turn it into information and intelligence allowing Route Asset Managers to make informed decisions. As the route continues to devolve self-assurance will become critical to ensure the data and intelligence we are acting upon is accurate. CP6 will continue to see the introduction of tools and systems to enable better predict and prevent approach to managing assets, whilst using performance and asset data to identify root causes. A risk to having accurate data stored in one location is that of security. The route will need to develop a cyber security plan on how to protect the data and the physical assets from any threats in this area. It will also need to be mindful of data protection laws and freedom of information requests that it may be subjected to. Utilising industry best practice and taking guidance from standards such as ISO 55000 and ISO 8000 will aid with this and other activities. In CP6 Western route will look to use the tools and capabilities provided by ORBIS, EBAK and other national programmes to change the way we work. In turn we expect these will enable us to invest in the right infrastructure at the right time.

6.4. Long run forecast



This graph describes the long term expenditure forecast to control period 12, assuming expenditure levels for CP6 are consistent with the levels outlined in this plan.

Beyond the end of CP6, the assumed level of investment is that to retain the character (condition and performance) of the asset at CP6 levels.

Individual asset condition and output long term trajectories for this long term level of spend can be found in Appendix D.

Note: This information is in 18/19 prices not cash prices, therefore the costs will not align to other numbers within the strategic plan or databook.

Expenditure and implications	Mitigations
Modelling shows a baseline assumption of c. £206m additional long-term expenditure per year over CP6 submission, mainly in the signalling asset group. This refers to planned resignallings at Worcester, Gloucester and Cornwall (deferred from CP6, now due CP7 – CP8), and at Exeter and Westbury (CP9 – CP11). Track and earthworks expenditure is also forecast to increase, while there is a reduction in operational property, where the CP6 expenditure level is dominated by significant works at Bristol Temple Meads station which are not forecast to be repeated. Overall, such expenditure is forecast to bring an improvement in plain line and S&C track remaining life, a significant improvement in signalling remaining life, and generally positive benefits to all assets.	Digital Railway (ETCS) may provide an opportunity to reduce expenditure on the planned resignalling schemes. Given that forecast increased volumes of expenditure will require the wider supply chain to be in a position to deliver, early engagement with the supply chain on forward workbanks is required to mitigate any resource constraints, including smoothing of the annual and control period profiles to create a sustainable delivery plan.

6.5. Sustainable Development strategy

The strategy for developing our social and environmental performance is aligned to two main strategies and one standard. Nationally we will be steered by central strategy proposed through the Responsible Railway Plan (RRP) developed by STE's environment and sustainable development team. This will be aligned and delivered through the route vision set out in the Route Strategic Plan. Connecting and controlling both strategies is NR/L1/ENV/100 – Level 1 Policy – Environment and social performance policy.

The main aim of the strategies are to deliver a *railway fit for the future* that cares for our environment and the communities it supports. This can be achieved through a number of programmes which include:

- Developing environment and social management systems, either aligned or accredited to ISO 14001:2015
- Biodiversity management – enhancing our understanding, offsetting negative impacts and mapping species and habitats for improved planning and resilience
- Energy and carbon management and reduction – RRP reflects on the development of ISO 50001 energy management system. Western route is to reduce energy consumption and carbon emissions.
- Weather resilience and climate change mitigation and adaptation – development of long term plan
- Improving communication and stakeholder engagement
- Developing a social value framework which aims to create social value through design, to connect communities and jobs, be a considerate constructor during railway works and to leave a positive legacy for future generations. Strategic route actions include looking at improving our charitable leave and valuing our heritage.

Depending on the programme, the social and environmental performance strategy should provide direction for improvements over the next eight years. Weather Resilience and Climate Change should look to benefit the route over a longer period due the return from investment when planning policy regarding flood risks.

Our commitment to environment and social performance stems from our route vision commitment to care for our environment and our communities and to be a good neighbour to those around us. Our activities focus on three main areas: environment and ecology, energy and our communities.

- Environment and ecology
  - Enact a committed long-term biodiversity action plan, with the support of Natural England;
  - In line with ISO14001, implement an independently accredited environmental management system, defining committed and funded plans for:
    - Responsible sourcing and procurement;
    - Diverting waste from landfill and improve recycling rates;
    - Carbon emission reductions;
    - Improved route environmental consciousness;
    - Climate change impacts and reductions;
    - Higher specification infrastructure works within environmentally sensitive sites;
    - Further mitigation against contamination risks.
  - Increase the dedicated route environmental specialist resources on the route with improved ecology management.

- Energy
  - Build on our planned 11.2% reduction in CO_2 in CP5 to achieve a 25% reduction in carbon emissions by the end of CP6;
  - Minimising energy usage in the workplace through effective management of our utilities connections;
  - Continue with a carbon psychology project to look at people's behaviours to reduce waste.

- Communities
  - Improving our social performance and our connection with our communities building on our successful approach to community engagement for the Greater West programme, continuing to work to reduce public complaints;
  - Work to improve accessibility to our network;
  - Encourage colleague community contributions through charitable leave;

Work alongside our train and freight operator colleagues to benefit customers, and build our relationships with community rail groups.

6.6. Technology (R&D) strategy

Network Rail has an established research and development strategy, linked to the Network Rail technical strategy and the GB Rail Technical Strategy. This national strategy is led by STE and creates prototype systems and equipment critical for a safer, more reliable, efficient and customer friendly railway - including productivity improvements (e.g. through automation) and hence affordability.
This route strategy interfaces to the national strategy and sets out the research and development activities on which the route will be involved over a rolling eight-year horizon to inform the route's long-term business planning activities on a rolling eight-year horizon.

More information is available in the route research and development strategy included in Annex 5.

6.7. Innovation strategy

Western route has a programme of development work aligned to the Network Rail Capability Delivery Plan. The focus of route work is around the tactical requirement to improve the availability of the railway system for customers; and to the requirements and opportunities presented by new train fleets and technologies delivered to the route for the start of CP6. Each of our locally driven initiatives is aligned to the national challenge statements and we work closely with other routes and customers to address emerging requirements. Our main CP6 R&D initiatives comprise:

- **Earthworks stability monitoring**
  This is additional to the national programme of earthworks monitoring as part of Intelligent Infrastructure. The route has accelerated monitoring of high risk sites using arrays of inclinometers and loggers to provide alerts on earthwork instability. The benefit is increased safety of the line and higher asset availability through timely and appropriate interventions

- **Service train infrastructure data collection.**
  5 x Class 800 and 3 x Class 802 IEP trains are fitted with Unattended Track Geometry Measurement Systems (UGMS) under the contract with Hitachi. This data is available to the route to process and align to track maintenance and asset management activity. The route has worked jointly with LNW and STE to develop the tactical hub at Coventry University to support data storage and analysis under "Big data" analytics. 3 x Elizabeth line class 345s allow MTR Crossrail to collect track and OLE data on Western infrastructure and the route are developing analytics with TfL under RSSB research project R685, which is focused on the principles of data sharing agreements for the management of the railway system. The route is undertaking innovative collaborative research with Oxford University and LNW in developing OLE pattern recognition for dynamic measurement of overhead line using the cameras fitted to the roof of every new train. This allows maintainability of the OLE to be addressed on the high speed sections, closing a measurement gap in the dedicated measurement fleet.

- **Traction Change Management**
  The IEP bi-mode (diesel or electric traction) timetable requires transition at speed between traction power in addition to changeover at station calls. The route is developing the operational methodology, linked to Automatic Power Change Over (APCO) balise management.

- **Intelligent Infrastructure extension**
  The route is the chosen pilot for fixed infrastructure trials on the extension of Intelligent Infrastructure for HPSS S&C reliability and busbar monitoring. If successful, the equipment will be extended across the country, further improving safety in maintenance by more timely and planned intervention.

- **Dynamic foundations for Track Bed**
  The route has known track bed instability associated with poor ground conditions, particularly over marshland (Somerset levels) or high groundwater areas – typically spring line locations created by geological conditions of chalk and greensand common in Southern England. The route is developing a dynamic track foundation solution which reduces the requirement for extensive ground stabilisation programmes required to address instability. The benefit is capital saving and improved track maintainability.

6.8. Asset management capability

In order that our assets are managed in a way that contributes towards a better railway by delivering the outputs expected by taxpayers and customers, safely, efficiently and sustainably at optimal whole life cycle cost we need to continue to develop and improve our people, process, technology and information capabilities.

As a route, we are engaging with the corporate strategy to implement an integrated management system. We have undertaken a gap analysis to the requirements of ISO 55001 to identify improvements to our asset management capability to enable alignment to the standard, and network-wide programmes such as "Better Every Day" and Home Safe Plan projects such as Business Critical Rules are also improving our quality management.

Western route aligns to Network Rail's three level model of assurance, where first line or supervisory assurance focuses on management of day to day operational risk and control activities (or self- assurance), second line focuses on overall effectiveness of individual policy and controls, and third line is fully independent assurance of the overall control frameworks. With devolution, the route has implemented a Business Assurance Committee to provide the route leadership team with oversight that the three levels are operating satisfactorily. Any further devolution of activity will be assured through this model.

In the context of change programmes, it is critical that these start from the requirements capture stage, without clear requirements there is no assurance that the programme contributes to the route strategy. It is also critical to conduct a detailed change impact assessment to ensure the full effect of the change is taken in to account across people, process, infrastructure and technology. In CP5 the route change function embedded governance and assurance through the mandating of MSP4NR, the introduction of decision making boards and stage gates. This will be enhanced in CP6 through the introduction of a comprehensive programme assurance strategy which formalises the use of compliance reviews and deep dives as well as a focus on requirements capture and change impact assessments at the inception of a programme in to the hopper. There is also a maturing process for milestone identification, reporting and target setting through strategy meetings and scorecards. This is being continuously improved and provides a visible measure of progress throughout the year for risk and opportunity management.

In the context of asset renewal, improving the quality of requirements documentation submitted, agreed, authorised at the outset is the key focus to improve the quality across the whole lifecycle of project delivery. Through our robust governance process, project go-live is dependent on the requirements of the project having been delivered successfully before a go-live approval is received.

For workforce safety, we will reduce potential harm by reducing the frequency of staff accessing the track. This will be delivered through the further use of automation introduced in CP5 by programmes such as Plain Line Pattern Recognition and Remote Condition Monitoring and will be supplemented by emerging technologies via Intelligent Infrastructure in CP6. We also continue to place an emphasis on our people's behaviour, driving safety improvement by staff owning safety and the strengthening of our compliance assurance framework using RM3 approaches.

This strategy represents the key areas of improvement necessary to support excellence in Asset Management and thereby:

- deliver enhanced reliability in our infrastructure;
- demonstrate a benchmark against which organisations worldwide assess their own asset management capabilities.

This is a route-led strategy which forms part of our overall suite of route strategies informing our long-term business planning activities on a rolling eight-year horizon. It also interfaces to the corporate asset management capability strategy.

6.9. Specific Sustainability Targeted Investment

Western Route welcomed the opportunity to put forward packages of work to further improve asset sustainability over Control Period 6 as part of our response to the Draft Determination. Our Route Strategic Plan aimed to maintain asset sustainability and to manage the risk to asset condition through the workbanks and maintenance activity proposed. For some assets, our plans resulted in a marginal worsenment in sustainability, typically through a reduction in remaining asset life. Overall, the forecast outturn for the composite sustainability index from our base plan was 1.3%. To improve this position, and to improve outcomes for level crossing safety, responding to ORR's challenge on sustainability we have submitted both initial and updated views of how additional money will be spent.

ID	Name	Net cost in CP6 (£m) 17/18 price base
RWES01	Cornwall and Devon signalling sustainability improvement	£10.1m
RWES02	Targeted track renewals	£16.7m
RWES03	Level crossing safety enhancements	£10.0m[1]
RWES04	Structures interventions including metallic structures painting	£6.7m
RWES05	Paddington drainage intervention	£1.7m
RWES06	Additional earthworks renewals	£2.9m
RWES07	Fencing and vegetation improvements	£2.0m
	Total:	**£50.0m***

1 The additional STE contribution of £4.16m is a separate programme of emerging technology
*Price shown here in 18/19 base. All other prices in the document are in cash prices

Modelling of the CSI contribution of these packages shows an improvement to route CSI of up to 0.737%, and 0.0561% to national CSI (based on the initial view of packages).

Priority of activity
In developing our packages of activity, we have sought to balance the programme across our asset base, addressing areas where our base plan did not improve sustainability to the extent that we targeted.

Specifically, we have included in our plan the following:

1. Signalling: our Route Strategic Plan proposed widespread refurbishment activity, and remaining asset life was modelled to reduce from 16.0 years to 13.8 years;
2. Track: sustainability forecasts showed a modest decline in sustainability in CP6, with an increase in SAF / FWI risk;
3. Level crossings: investment options proposed in the Route Strategic Plan
4. Structures: condition scores were only stable in CP6 and additional work is proposed for metallic structures;
5. Drainage: STE assurance stated that “condition sustained at current levels”;
6. Earthworks: although modelling notes a modest improvement in sustainability, we note wider assurance concerns about earthworks volumes;
7. Off-track: risk of animal incursion and vegetation issues.

7. Financial performance

7.1. Financial performance objectives

Financial Performance		19/20	20/21	21/22	22/23	23/24	24/25	25/26	Achievability
Financial Performance Measure (FPM) – Gross Profit & Loss	WORSE THAN TARGET	-5.5	-5.5	-5.5	-5.5	-5.5	-5.5	-5.5	
	TARGET	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	BETTER THAN TARGET	5.5	5.5	5.5	5.5	5.5	5.5	5.5	
Financial Performance Measure (FPM) – Gross Renewals	WORSE THAN TARGET	-18.2	-18.2	-18.2	-18.2	-18.2	-18.2	-18.2	
	TARGET	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	BETTER THAN TARGET	18.2	18.2	18.2	18.2	18.2	18.2	18.2	
Financial Performance Measure (FPM) – Gross Enhancements	WORSE THAN TARGET	-31.8	-31.8	-31.8	-31.8	-31.8	-31.8	-31.8	
	TARGET	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	BETTER THAN TARGET	31.8	31.8	31.8	31.8	31.8	31.8	31.8	
Cash compliance – income & expenditure	WORSE THAN TARGET								
	TARGET								
	BETTER THAN TARGET	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Key stakeholder priorities

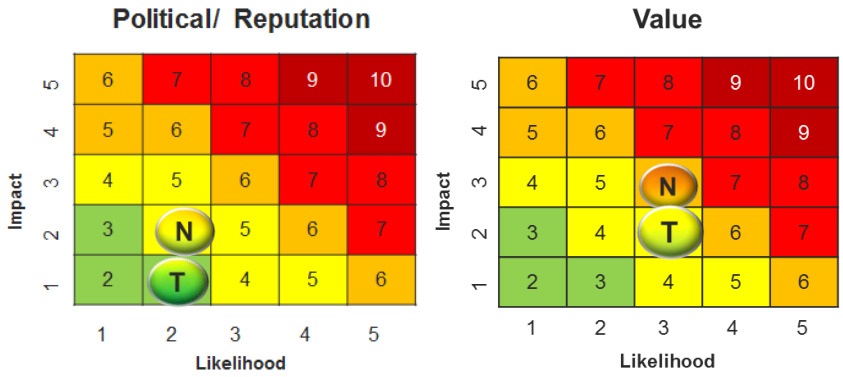
Below is a summary of key stakeholder priorities identified through our engagement with stakeholders throughout the development of the route plan. Further information including the approach taken to engage with our stakeholders can be found in Appendix A.

Key stakeholder priorities	Response
Need to work with our stakeholders on growing the economy through rail	An Alliance workstream has been set-up with GWR to build an aligned approach to business development. Our route supervisory board also has a role in bringing together stakeholders, as does the contribution of third-party finance to the railway
Need to attract greater third-part investment to rail	Western route has appointed a Business Development Director to actively seek out investment opportunities
Financial metrics should be included on the route scorecard	Key financial metrics will continue to be included within the route scorecard
Delivery must be affordable and efficient	A structured plan for efficiencies has been developed and is tracked on a periodic basis. Access has been optimised through a coordinated route plan, the OnePlan, to enable access efficiencies to be realised.

7.2. Financial performance activity prioritisation

Summary of objectives	The route will deliver its CP6 plan within the funding/cash allowance agreed and delivering the planned level of efficiencies. The route has planned on delivering a net zero FPM in line with target – a net zero position will mean the route has managed its risks, opportunities and efficiencies appropriately.

No.	Key objective drivers (constraints, risks and opportunities)	What we plan to do	Owner	Timescale (start/ finish)
1	Assumption: The RSP does not take into account any future enhancements other than those being delivered at the point of the final SBP in February 2018. It is assumed that future enhancement project funding will allocate additional funds to the route to cover incremental operating, maintenance, support and renewal costs and any shortfall in income (e.g. Sch 8)	As part of the business planning process moving forward we will include any additional enhancements which NR are asked to deliver. During this process we will highlight additional costs to the route to ensure these are part of the initial project estimate, and our business plan for the core business goes through the appropriate change control.	RFD	Through CP6
2	Dependency: National employee relations allow us to make structural changes to realise planned efficiencies	Continue to work through our efficiency plans articulating what the route needs in order to realise these benefits. We will feed these into the national transformation team	RFD	December 2019
3	Risk: Introduction of new GWR timetable and Elizabeth line services impact Maintenance and renewal activities far greater than expected. The main impact will come from far greater wear and tear and our reduced access	Continued planning using the activity based planning tool in conjunction with detail of the Elizabeth line timetable when this is confirmed. Identify and manage any risks materialising.	RFD	December 2019
4	Risk: Extreme event (e.g. storms) causes substantial damage to the network resulting in multi million pound damage which the route hasn't planned for in the SBP.	Provide analysis and knowledge into the central requirements for contingency as part of the SBP. Ensure we deliver our own plans in CP6 improving asset condition and our ability to predict and prevent.	RFD	Through CP6
5	Risk: Our operations, maintenance and renewals efficiency plans are not delivered at the pace and scale required to meet our plan	Our internal CMO team will continue to plan and deliver our improvements. Many of our planned CP6 improvements are locally driven which less emphasis on national strategies and direction. Milestones for all improvements have been developed with owners and due dates and will be subject to regular monitoring.	RFD	Through CP6
6	Risk: Delivery teams are not able to operate within the constraints of the DEL resulting in loss of funding and renewal volume.	Early engagement with delivery teams has taken place during the development of this plan. Continued close engagement with and guidance of the delivery organisations will take place throughout the control period to minimise this risk.	RFD & DRAM	Through CP6



Summary of risk outcome
CP6 efficiencies will be challenging in conjunction with new significant passenger benefit projects going live. We are continuing to develop our plans for CP6 so we understand all our key milestones and who owns delivery.

7.3. Financial Sustainability strategy

Financial management is critical to the success of the route now and during control period CP6. During CP6 we will be subject to tighter financial controls than we have been working to in CP5.

The route financial strategy covers income, operating expenditure, renewals and contingency. As we move into CP6 greater clarity on enhancement delivery and funding will be given which may be subject to the same controls.

The key changes in CP6 are:

- Greater focus on true cash management not spend vs budget. Managing our actual inflows and outflows will be very important at route level,
- Flexibility to move renewals budgets to operating costs and income will cease,
- Flexibility in moving budget between financial years will be reduced significantly and such requests will be required much earlier in the current financial year,
- Management of new risks at route level such as inflation.

Failure to manage our finances within these controls will mean a loss of funding; however, the route will still be expected to deliver the outputs in our plan.

More detail of the route financial strategy can be found in Annex 5.

8. Activities & expenditure

8.1. Cost and volume summary

This plan is predicated on the key assumptions laid out in Appendix B and will be impacted as these assumptions change

RENEWALS COSTS (post headwinds and efficiencies in cash prices)

	Unit of Measure	Funded by	CP5 (£m)	CP6 (£m)						CP7 (£m)	
			18/19	19/20	20/21	21/22	22/23	23/24	CP6	24/25	25/26
Track	£m	Renewals		89	76	87	111	126	489	57	58
Conventional Signalling	£m	Renewals		59	76	114	120	89	458	53	54
Structures	£m	Renewals		29	40	44	41	37	190	22	23
Earthworks	£m	Renewals		25	20	18	19	20	102	12	12
Drainage	£m	Renewals		4	4	5	5	4	22	3	3
Buildings	£m	Renewals		15	45	52	37	19	168	20	20
Electrification & Fixed Plant	£m	Renewals		19	13	19	23	15	89	10	11
Other	£m	Renewals		0	0	0	0	0	0	0	0
Total Renewals	**£m**	**Renewals**		**240**	**273**	**339**	**355**	**311**	**1518**	**176**	**180**

The above table shows our renewals costs inclusive of cost increases ("headwinds", such as the impact of additional overhead electrification on our working practices and track access) and our planned efficiency initiatives. Structures shows a net increase over CP5 expenditure due to prioritisation of additional spending on renewals activities which have been deferred from CP5. Buildings includes funding to complete a renewal to the roof at Bristol Temple Meads station, while our E&P spending is reflective of the changed asset base due to electrification.

KEY VOLUMES

			CP5	CP6						CP7	
	Unit of Measure	Funded by	18/19	19/20	20/21	21/22	22/23	23/24	CP6	24/25	25/26
Plain Line	Linear track km	Renewals	96.5	65	80	114	78	63	**400**	0	0
S&C	No. of S&C units	Renewals	79	37	48	37	42	44	**208**	0	0
Conventional Signalling	SEU (weighted)	Renewals	478.7	80	27	8	50	9	**174***	0	0
Embank/Soil Cut/Rock Cut	No. of	Renewals	278.9	364	361	356	355	358	**1793**	0	0
Underbridges	Number of assets intervened on	Renewals	-	27	33	37	37	26	**160**	0	0
Underbridges	m2 plan deck area worked on	Renewals	3,492	3,155	6,710	7,210	6,734	6,275	**30,083**	0	0
Wire runs	No. of	Renewals	0	0	0	0	0	0	**0**	0	0
Conductor Rail renewal	Km	Renewals	0	0	0	0	0	0	**0**	0	0

** Note: 174 SEU volumes equates to individual 790 work type volumes*

While the production of the CP6 plan has undergone significant assurance and challenge during its development to ensure it meets business needs and is deliverable it is understood that risks may arise during CP6 that will adversely impact the delivery of work set out in this document. The Route holds a level of risk funding in addition to the core plan that can be called on to prevent reactive re-planning of our activity should any risks materialise. If risks do not materialise there will be an opportunity reinvested the remaining funding in improving the railway.

Details of our efficiency plans can be found in Section 10 of this document.

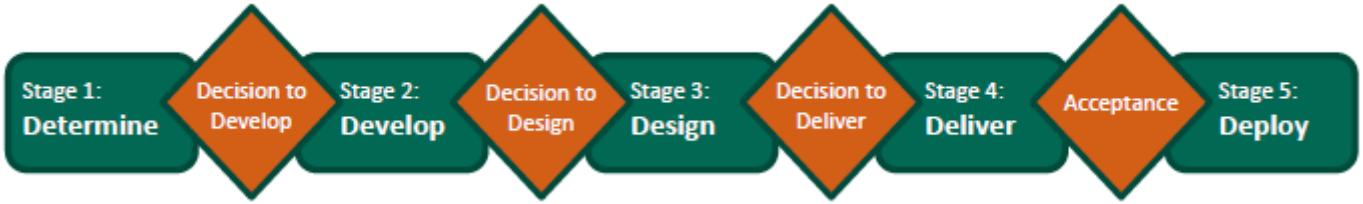
OPEX COSTS (post headwinds and efficiencies in cash prices)

	CP5 (£m)	CP6 (£m)						CP7 (£m)	
	18/19	19/20	20/21	21/22	22/23	23/24	CP6	24/25	25/26
Track	55	59	54	55	56	57	281	61	58
Off track	4	7	4	4	4	4	24	4	4
S&T	21	23	24	25	25	26	123	25	26
E&P	13	13	14	14	14	15	70	12	13
DU HQ	11	8	11	11	12	12	53	13	13
DU/WD Maintenance excl. B&C	105	111	107	108	111	114	551	115	114
Non DU Maintenance	27	43	56	48	51	54	253	58	63
Civils: Buildings Maintenance	10	10	10	10	10	10	50	10	10
Civils: Structures Maintenance	7	9	10	10	10	10	48	10	10
Civils: Earthworks Maintenance	1	1	1	1	1	1	5	1	1
Total Maintenance Costs	**150**	**173**	**184**	**177**	**183**	**189**	**907**	**193**	**197**
Operations	59	54	54	55	54	53	270	56	61
Support	4	22	2	14	16	16	69	16	17
Operations & Support Costs	**63**	**76**	**57**	**68**	**69**	**69**	**339**	**72**	**78**
Total Controllable Costs	**214**	**250**	**240**	**246**	**253**	**258**	**1,246**	**265**	**275**
Non-Controllable Costs	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**1.5**	**0.3**	**0.3**
Headcount									
Permanent	2,785	2,861	2,788	2,710	2,710	2,710	2,710	2,710	2,710
Agency	8	4	3	3	3	3	3	3	3

The above table shows our operational costs inclusive of cost increases (“headwinds”, such as the impact of additional overhead electrification on our working practices and track access) and our planned efficiency initiatives. Overall, we are planning to spend more money on maintaining the infrastructure in view of the addition train services which will operate. CP6 maintenance costs are shown with delivery unit costs separated from the costs of the rest of maintenance, which includes the route asset management directorate, workplace management, civils examinations and route-wide vegetation management activity.

8.2. Enhancements

In contrast to previous Control Periods, in CP6 Enhancements can be introduced at any time. A DfT funded Enhancement is required to go through the three key stages of the Investment Decision Framework before it can progress to the delivery phase. These stages are the decision to develop, the decision to design and the decision to deliver (the Final Investment Decision (FID)). The full Network Rail Enhancements Pipeline process is shown below.



Significant Enhancements that are funded from other sources are expected to follow the same process. Only Enhancements that have passed the Final Investment Decision point, or have delivery funding confirmed if third party funded, can be included in the Route plans.

The route has 3 DfT funded Enhancements that have currently passed FID (November 2018), these are Bristol Temple Meads Station Capacity, Western Route Flood Resilience and Great Western Electrification (committed elements). The Great Western electrification crosses the route boundary in to Wales.

8.3. Digital Railway strategy

The route fully supports the Digital Railway programme; however, there are no specific interventions on Western route in CP6, in line with Digital Railway programme. Western is working closely with Group Digital Railway to develop business case options for deployment schemes on the route. Specifically under development by Digital Railway is a business case for a traffic management and connected driver advisory system deployment on the route which would address concerns of delay per incident and improve train performance. In support of this, the route is trialling Traffic Management technology in the Thames Valley Signalling Centre by the end of CP5 in order to assess the benefits which may arise from such an intervention. Furthermore, the route is planning to upgrade track circuits to axle counters between Paddington and Airport Junction as part of the signalling plan. These will be delivered to Digital Railway Ready specification for any future rollout of wider digital technologies.

Digital Railway ready specifications

Passive provision

For like-for-like renewal (e.g. no capacity enhancement), provision for DR Ready specifications is termed **passive provision.** For these schemes, a DR Ready specification is assumed not to add material cost. This is based on the following assumptions:

- No change to train detection and therefore no need to design a separate ETCS compliant option
- Competitive procurement arrangements embedding the DR Ready Specification from inception of the scheme

- Support is given to the routes by a core team (DR, STED and IP) to ensure a consistent interpretation of the specifications.

Active provision

Where signalling renewals coincide with the need for an increase in capacity, based on a need identified in the Route Studies, there would be an increase in project scope to comply with the digital ready specification. This scope is termed **active provision** and is driven by additional train detection requirements.

The table below illustrates the assumed cost changes (drivers, efficiencies and net) for the signalling scheme affected:

Scheme	Provision type	Activity/scope changes (£m)		Net change to plan (£m)	Funded by
		Drivers	Efficiencies		
Paddington – Airport Jn axle counters	Passive	0.0	(0.0)	0.0	Renewals

8.4. Property strategy

The central property team have developed a strategy outlining plans for investment in stations as well as disposal of unused railway assets to allow additional investment in the rail infrastructure. Full information can be found in the property short form strategy included with the delivery plan.

9. Delivery strategy

9.1. Summary route deliverability statement

Western route has developed a strategy to integrate project works and maintenance works to optimise the access plan to make the best use of the limited access available. Working in collaboration with Infrastructure Projects, the route has created an integrated access and logistics plan enabling the most effective and efficient use of access and resources and minimising customer disruption (the "OnePlan"). This planning has resulted in a high degree of confidence for the efficient delivery of the volumes set out in this Route Strategic Plan. The volumes have been subject to local delivery assessment between the route asset managers and their delivery partners at an early stage of development. Further, the volumes are considered deliverable as across all assets and years they are below the peak volumes delivered in the early years of CP5.

Earlier in the route strategic plan development process the route commissioned an independent deliverability assessment of our workbanks to inform this submission. Following this, engagement between the route and our delivery partners was improved to inform this submission, and we have worked collaborative with our deliverers on both our plans and efficiency opportunities.

To support assessment of deliverability, the route has used a self-assessment approach developed by the Independent Reporter, and used with their permission. This uses a 1-5 (immature – mature) assessment scale against a series of criteria to show how developed and deliverable our plans are for each asset. The summarised position is shown to the right, and further work will be undertaken to increase the level of maturity for the later years of the control period.

	Workbank Definition	Key Resources	Access Requirements	Cost Confidence	Delivery Agent
2019/20	5	4	4	4	4
2020/21	5	4	4	4	4
2021/22	4	4	3	3	4
2022/23	4	4	3	3	4
2023/24	3	4	3	3	3

In addition, in assessing deliverability, the route has considered the workbank activities where critical resources are needed to plan effectively. The list is drawn from the data room and is identified against a timetable year for engineering access purposes.

- There are no OLE critical resources required in CP6 as only renewals campaign changes remain for the Great Western Electrification;
- There is no major resignalling within CP6 but design and testing resource is required for train detection work between Paddington and Airport Junction;
- We have given an indication by year for Kirow Cranes, S&C and Plain Line Tampers. Our assessment also includes the underbridge activities where track lifting and tamping is required;

9.2. Planning a Better Network strategy

The railway system drives economic growth. It transports people to and from work, education and social activities and it carries goods to markets, connecting businesses. Many parts of the network are at or approaching capacity at certain times of the day. Over the longer term we expect this demand for rail to continue to grow, so capacity is a valuable commodity. Getting best use of track, train and station capacity today, and expanding the capacity of the system in an affordable and value for money way is a key challenge for the whole industry. Growing our capacity is paramount to supporting growth in jobs, housing and economic growth.

Capacity is at the heart of everything we do; our activities span the breadth of railway planning in terms of time horizons - what the railway could look like in 30 years to tomorrow's timetable - and the full spectrum of system opportunities to deliver more capacity including better timetables, longer and more trains, new technology and, where necessary, new infrastructure. This strategy represents the route's strategy for capacity and growth principally within the next 5-10 years, drawing upon our long term planning process, which considers such requirements within a 30-year context currently up to 2043.

The Western Route Study envisages continued growth for both passenger and freight services on the network. Demand for travel in to London Paddington during peak periods on Main Line services is forecast to double by 2043 with up to 29% of that increase expected by the end of CP6. Significant growth factors also drive forecast growth in regional journeys to Bristol Temple Meads, and other key economic centres such as Oxford, Exeter and Plymouth of up to 47% by the end of CP6 and up to 111% by 2043. The Western Route is also the second-busiest route into London for the UK's rail freight industry.

Passenger growth continues to outstrip forecast growth across the route with the railway being a significant driver of economic growth. In order to keep pace with this level of growth the route will explore new ways of funding and delivering capacity enhancements on the railway, working with local communities to align and present joint strategies for how rail can deliver such growth and improvements in capacity, capability and connectivity. Priority areas for capacity improvements, and forecast growth, continue to be into London and Reading and also Bristol, Oxford and Exeter.

The Greater West Programme delivers a number of benefits incrementally during CP5 and CP6, key amongst which is significant additional capacity on services across the route enabled by a series of infrastructure interventions such as four tracking between Dr Days Junction and Filton Abbey Wood, additional platforms at Filton and Bristol Parkway and platform. This additional capacity is delivered through the introduction of Intercity Express Trains on mainline routes along with the cascade of higher-capacity rolling stock from the Thames Valley to provide additional seats on journeys in to urban centres in the South West such as Bristol and Exeter.

The full introduction of MTR Crossrail and Elizabeth line services in CP6 from Reading to Shenfield will drive huge increases in capacity, connectivity and journey time improvements which will meet forecast demand for relief line services into London by 2023 with each train accommodating 1,500 passengers.

Our future plan provides the services and support to build on CP5 investment and the benefits this can bring whilst reviewing opportunities to deliver more new services, greater capacity with improved journey times and connectivity through prioritisation of requirements into CP6 and beyond.

We will work with Government, funders and stakeholders to develop longer term strategies for the network utilising our new continuous modular approach to long term strategic planning and provide advice to funders on investment priorities through development of a future enhancement pipeline. This pipeline will present recommended interventions as choices to funders on a short (5 years), medium (10 years) and long term (30 year) basis which could address key capacity challenges of the system. The plans will also feed refranchising, capacity allocation and access rights.

To meet the capacity challenge, infrastructure and technology interventions such as Digital Railway are under development to enhance the capacity and performance of the Western route. Opportunities to attract parties new to the rail industry to contribute funding to this portfolio of investment options will be actively explored.

9.3. Project Delivery (Infrastructure Projects) strategy

In CP6 the route will develop a diverse contracting strategy with NR Infrastructure Projects, Works Delivery and other third-party contractors to deliver our renewals workbank. The route will seek to introduce contestability in CP6, bringing in new contractors to drive further competition and efficiency, reducing unit rates.

Track renewals will continue to be shared between IP Track and Works Delivery as is the case in CP5, with Works Delivery leading for track renewals in Devon and Cornwall. IP Signalling will continue to be a leading deliverer for our signalling works, with IP Western & Wales' SP&C organisation a delivery partner for some of our mid-life intervention works. Across our civils assets, the Works Delivery Buildings & Civils team will continue to be a leading delivery partner.

9.3.1. Access

Access to the railway in CP6 to undertake maintenance and renewals works will require continued robust planning and efficiency in delivery on site as the route will be operating the additional Elizabeth line services and the enhanced Great Western intercity timetable both of which reduce available track access compared to today's railway. Services, notably Elizabeth line, will also be running later in the night and starting earlier each morning, further restricting maintenance access.

Furthermore, disruptive works at Old Oak Common for the HS2 programme place further constraints on access to the infrastructure for routine works, including the potential for large-scale disruptive access requirements.

The route has therefore developed a strategy to integrate project works and maintenance works to optimise the access plan to make the best use of the limited access available. The route is working in collaboration with IP to create an integrated access and logistics plan enabling the most effective and efficient use of access and resources and minimising customer disruption.

The route will also look to leverage benefits afforded by our alliance with GWR to collaboratively develop access strategies which enable safe and effective delivery whilst providing the best possible train service for passengers and freight, working with all operators on the route.

The access restrictions will also require new work delivery methodologies for standard maintenance and renewal activities and will also require route teams to take opportunities to reduce possession and electrical isolation operational times through use of new processes and technologies.

9.3.2. Supply chain capability

Early engagement with our various supply chain partners is key to securing delivery of our plans. We are confirming our workbanks as early as possible to enable our Route Services and IP delivery partners to mobilise in a cost-efficient and effective manner.

Route Services supplies Western with the services we decide are best provided from a national team. This approach enables national co-ordination, and for Network Rail to benefit from economies of scale and greater efficiency from specialised delivery. Route Services consists of four primary functions. **Supply Chain Operations** (SCO) delivers the logistics, materials, components and fleet that enable the maintenance and renewal of our railway infrastructure. **IT** shapes, builds and runs the technology services needed to support our railway, now and into the future. **Business Services** manages and delivers support services on our behalf such as shared services, and training, and national **Contracts and Procurement** (C&P) secures and manages the national contracts and supplier relationships which we rely on. Delivered through a team of c.3,000 employees, the Route Services portfolio consists of over 50 services, with £1bn of direct spend as well as the management of a further £2bn of indirect spend on behalf of the route businesses.

The introduction of Service Catalogues with customer-facing KPIs has enabled us to hold Route Services to account at a local level, as well as identify mission critical services for the route, and collaborate on joint improvement plans.

Through the services they deliver, we look to Route Services for subject matter expertise, access to their supply chain, and strong delivery partnerships with suppliers, to get the best value and quality possible for our route. Route Services is responding positively to our challenge to them to deliver the outstanding performance, cost competitiveness and commercial approach which we expect.

In Western route we include senior members of the Route Services leadership team within our key meetings, including weekly Visualisation. As an example of collaboration, Route Services is supporting the Alliance in developing the use of technology collaboration tools.

With respect to seasonal treatment trains, we require the overhaul of the railhead treatment train (RHTT) fleet to enable continued robust seasons delivery through CP6 and will work with Route Services to identify changing RHTT requirements arising from amended traffic patterns and new passenger rolling stock. Specifically, additional treatment sites in the inner Thames Valley may be required along with additional treatment runs may be required in Cornwall as a result of the enhance train service. It will also be important in CP6 to consider what measures can be taken to improve responsiveness to emerging operational requirements, including having greater localised fitter and repair capability as well as being able to provide additional treatment as needed.
Pressure on train paths with the new enhanced timetable may also require service trains to be fitted with infrastructure monitoring equipment to provide information about the impact of the additional tonnage in operation on the route, notably in the Thames Valley.

9.3.3. Works Delivery capability

In view of the significant increases in volumes to be delivered by Works Delivery, the route has reviewed the resourcing and structure of the Works Delivery team. A number of changes have been implemented, with the size and capability of the team increasing to match the increased demand.

9.4. Wheeled Plant strategy

The route has been working closely with Route Services with respect to on track machines and on track plant. Specifically, responding to the challenges of additional tonnage and reduced maintenance access, we are working with Route Services to achieve the following OTM requirements for the route:

Tampers: Predicted requirement is 578 maintenance shifts per annum. Coupled with renewals and project work results in the Route requesting the following fleet from SCO:

- 2 x 08 4x4 Unimats to be replaced in 2020/21 with 2 x 09 4s Dynamic Tampers (these machines will be fitted with CAL, Intelligent DTS and DRP);
- 2 x 08 4x4 Unimats (in place throughout the control period and potentially fitted with DRP)
- 2 x 08 Compact (fitted with Sprinter and potentially DRP throughout the control period);
- 2 x B41s (throughout the control period).

Stoneblowers: Predicted requirement 255 plain line, 165 multi-purpose shifts per annum
- 1 x MPSB;
- 1 x PLSB

Regulators: Predicted requirement 120 shifts per annum
- 1 x USP 5000 Regulator

Currently the Route has access to two plain line stoneblowers which are shared with Wales along with a proportion of the three multipurpose machines which operate nationally. In CP6 the Route has significantly increased demand for both plain line and S&C stoneblowing due to proven track geometry outputs & the associated durability of the improvement which allow life extension of the track rather than renewal. This situation is mirrored nationally and therefore capability to meet the additional S&C demand will not be available in the first two years of the control period whilst new multipurpose machines are sourced by Route Services to replace life expired plain line machines. The business will need to prioritise stoneblowing resources and where appropriate undertake alternative treatment in the meantime.

9.5. Maintenance strategy

9.5.1. Access

Maintenance access has the same requirements as discussed in section 9.3.1 above.

9.5.2. Maintenance capability

Maintaining a safe, sustainable, reliable railway by doing the right things at the right time in the right way

Increasing traffic demand and reduced access time present continuous challenges for undertaking maintenance. New trains, an electrified railway, train borne signalling and new maintenance techniques drive an imperative to evolve how maintenance is performed in order to provide an increasingly safer, sustainable and more reliable railway.

This strategy addresses the main elements of our eight year maintenance plans in the areas of organisational effectiveness and 'predict and prevent' through use of emerging technologies, while developing and supporting our people.

Our strategy has five key themes:

- Standardising activity in conjunction with developing team working
- Increased adoption of Risk Based Maintenance founded on improving asset intelligence
- Development of an effective and responsive organisation
- Increase in mechanisation
- Embedded Better Every Day culture

Where we want to be

'Safe and efficient working' will be in place bringing together the 'right work' created in an efficient, smoothed, resourced plan, aligned with agreed and sufficient track access.

Increasingly, maintenance requirements will be founded on reliability centred maintenance analysis and assured in part through the use of Intelligent Infrastructure and train-borne monitoring. Volumes and maintenance costs will be fully represented through Activity Based Planning models.
Multi-functional, centralised geographic planning; leveraging capability and reducing effort duplication will support 'doing the right thing at the right time in the right way'.

Our success is dependent on how individuals and teams perform. Our future organisation will be right sized, shaped to support customer line of route and consist of local and centrally provided capabilities. Front line team leaders will be exercising greater leadership to maximise team effectiveness and productivity; supported by an in-house leadership and team development capability following on from the teams improving maintenance training delivered across CP5. Increased response capability will be embedded across the Elizabeth line footprint.

We will be leveraging state of the art capabilities of technologies afforded by introduction of latest generation on-track machine fleet
Our maintenance accommodation will be fit for purpose and in the right location to support the emerging need of the railway.

How we will get to the future

Organisational Effectiveness

- Leadership development will continue through the 'Teams Improving Maintenance (TIM)' coaching and mentoring and roll out of the leadership development module under the 'Great Culture Great People' work stream. The intent is to empower front line decision making and leadership at team level.
- Apprentices will continue to be on-boarded to bring fresh blood into the organisation to counter an ageing workforce and robust succession planning will continue to be enacted throughout the organisation

Predict & Prevent

- We will continue the implementation of plain line and S&C Risk Based Maintenance regimes and work with the National team to further develop and embed train bourn capabilities such as eddy current and Intelligent Infrastructure solutions; provided they show demonstrable benefits.
- Embedding the Activity Based Planning tool alongside emerging Discipline Asset Policies will better target activity and enable better understanding of maintenance effectiveness and volume requirements.

Technology

- High speed 09-4X Tampers will be introduced in 2019 to deliver track geometry and quality maintenance in the Thames Valley to enable continuing treatment of track is shorter access periods
- Increased use will be made of Multi-Purpose Stone Blowers will be made when new machines enter the fleet in 2021/22 as part of a comprehensive OTM strategy developed during the final year of CP5. It is assumed in both of the preceding that Route services will successfully procure through the supply chain.

9.6. Operations strategy

Our operations strategy is focused on excellence in operations to deliver an on-time railway. Key features of this include collaboration with all operators, including through our Alliance with GWR, close partnership with track and train working together, improving customer satisfaction. We aim to operate the railway in a manner that keeps our colleagues and customers safe. We will achieve this by focusing our strategy on the five route strategic themes of CP6.

We aim for an operations team capable of delivering the needs associated with the demanding requirements of a modern railway, in a consistent and customer focussed manner.

People

We want to achieve an engaged, motivated, healthy workforce that is able to meet their potential and tackle the challenges associated with delivering a high performing 21st century railway. This will be evidenced through a reduction in operational irregularities, improved fatigue management, reduced sick days and reliance on overtime, improved scores in staff monitoring surveys, succession planning through providing opportunities for personal development, an increasingly diverse workforce and increased investment in accommodation facilities to meet the needs of all our staff.

Use of Technology

Taking opportunities available to deliver improved train performance with new technologies e.g. Luminate (intelligent traffic management) and European Train Control System (ETCS), developing processes which enhance our use of data and technology, using the technology available to make business efficiencies, and to improve communications/engagement. This will result in improved performance metrics, particular focus on right-time, efficiencies in hotels, travel, vehicle deployment etc. clear and effective data sharing both within Network Rail and with customers.

Collaboration

Close and transparent relationships with both train operators and other Network Rail functions, improved business efficiencies through improved collaboration and communication will result in operations based on balance of track and train requirements, delivery of right time metrics and customer satisfaction, delivery of enhancements and renewals projects safely, efficiently and on time, evidenced through continuous improvements with lessons learned and sharing of best practice, both within the route and across Network Rail.

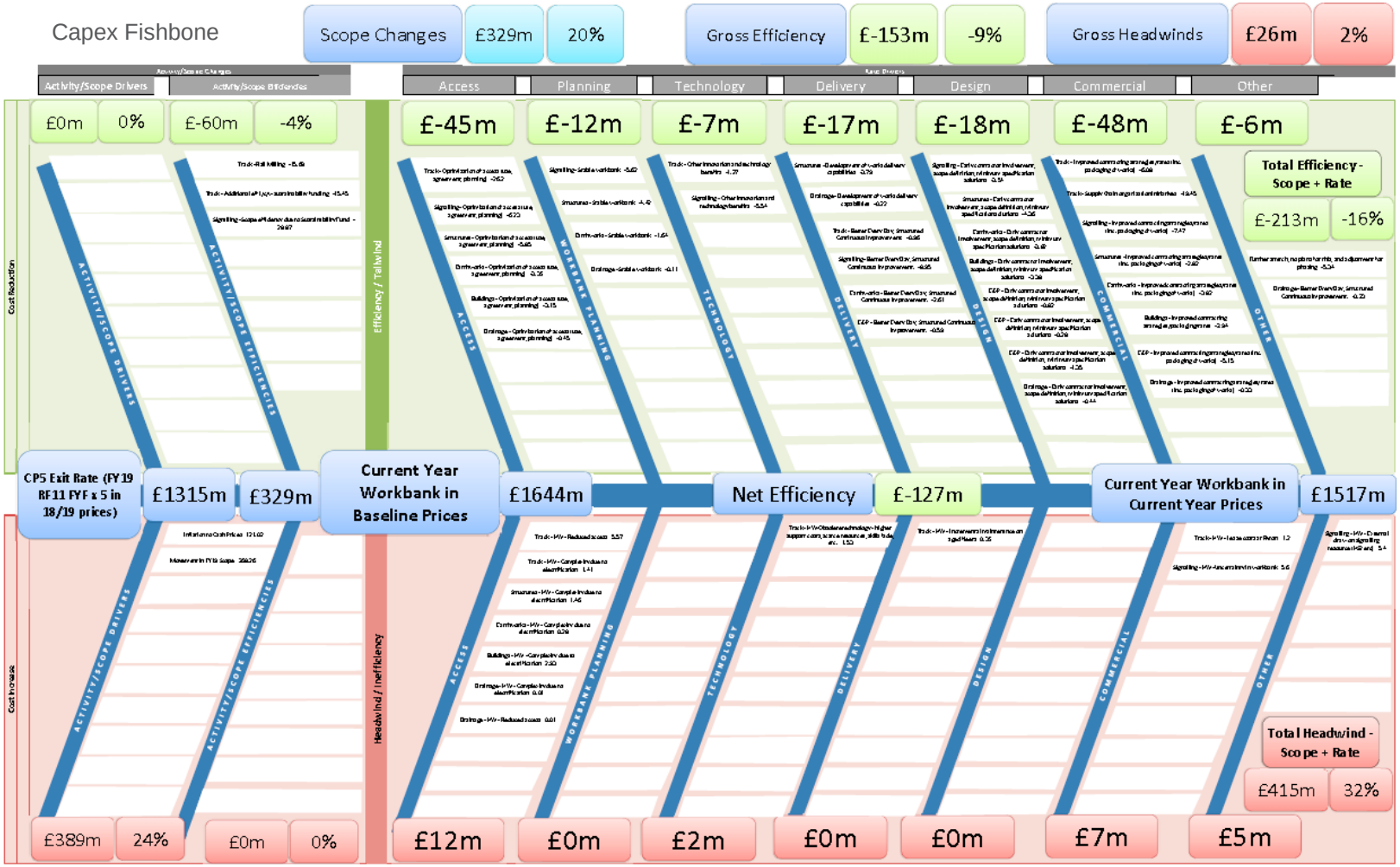
Resilience

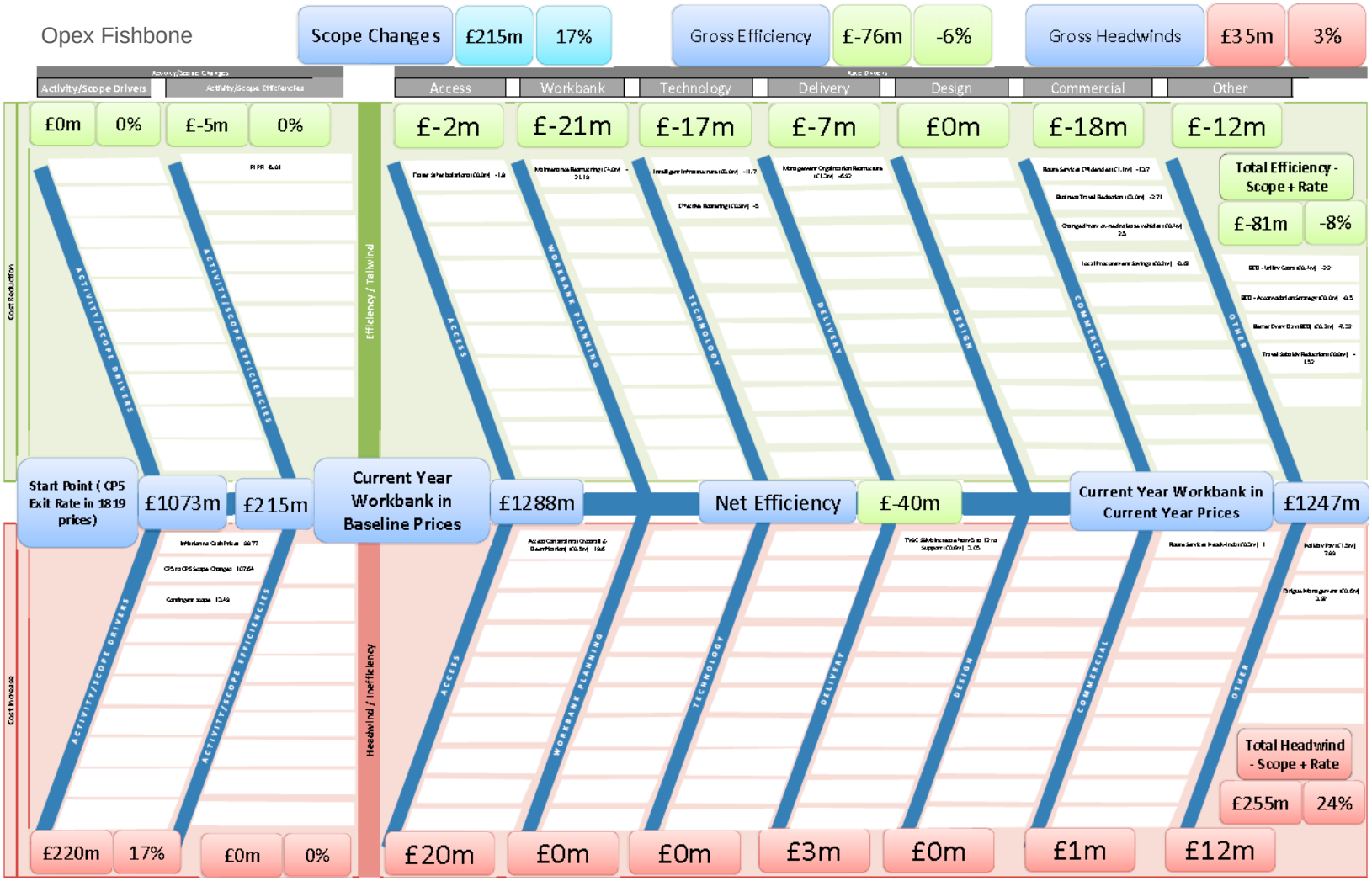
We will implement business continuity programme across the operations function, to include contingent resources and equipment resilience with consistent and effective contingency plans, effective competency management and succession planning, and improvements in weather mitigations and preparedness. We will fully integrate our Incident Officer teams.

This will result in improved performance delivery in adverse weather, and reduced reactionary delay, ability to overcome any staffing challenges, evidenced though a clearly demonstrable and auditable competence profile.

10. Headwinds and efficiency

Within this section are details of both the efficiencies that will reduce costs and be achieved through the control period as well as headwinds that will increase costs above the level see in CP5. Details are shown for both capital expenditure and operational expenditure.




Opex Fishbone
Scope Changes
£215m
17%
Gross Efficiency
£-76m
-6%
Gross Headwinds
£35m
3%
Activity/Scope Drivers
Activity/Scope Efficiencies
Access
Workbank
Technology
Delivery
Design
Commercial
Other
£0m
0%
£-5m
0%
£-2m
£-21m
£-17m
£-7m
£0m
£-18m
£-12m
Total Efficiency - Scope + Rate
£-81m
-8%
Cost Reduction
Efficiency / Tailwind
Start Point (CP5 Exit Rate in 1819 prices)
£1073m
£215m
Current Year Workbank in Baseline Prices
£1288m
Net Efficiency
£-40m
Current Year Workbank in Current Year Prices
£1247m
Cost Increase
Headwind / Inefficiency
£220m
17%
£0m
0%
£20m
£0m
£0m
£3m
£0m
£1m
£12m
Total Headwind - Scope + Rate
£255m
24%

11. Risk and uncertainty in the plan

	Unit of Measure	CP6 (£m)						CP7 (£m)	
		19/20	20/21	21/22	22/23	23/24	CP6	24/25	25/26
Risk (Route held)	£m	0	28	35	38	60	**161**	0	0

This section sets out our estimate of the degree of financial uncertainty within our plan.

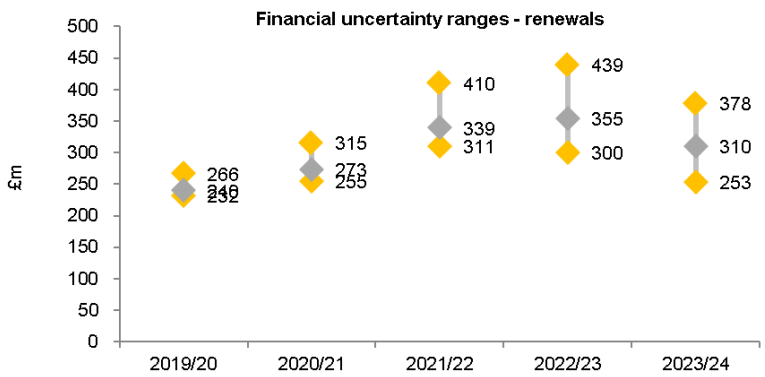
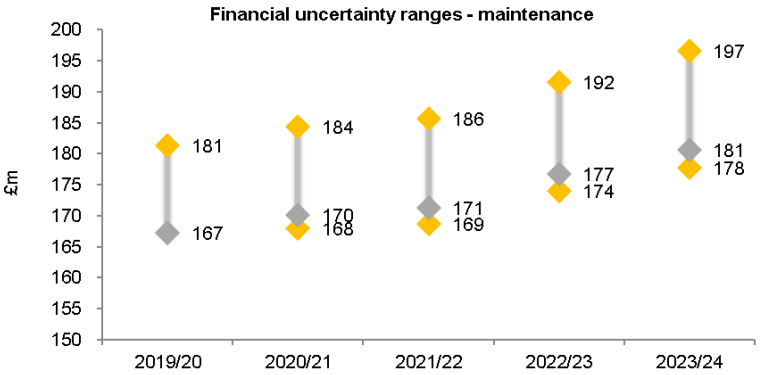
Pre-efficient costs in our plan are based on 'current rates' but include any additional scope needed to deliver the outputs in the plan. We have used 2016/17 unit rates to develop our capital expenditure forecasts and CP5 exit rates for support, operations and maintenance expenditure forecasts. Drivers of rate increases (headwinds/inefficiencies), or rate reductions (efficiencies/tailwinds), where there is a reasonable expectation they will occur, have been identified separately from the core CP6 plan.

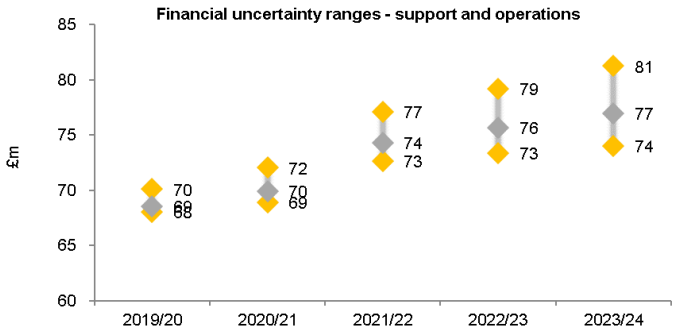
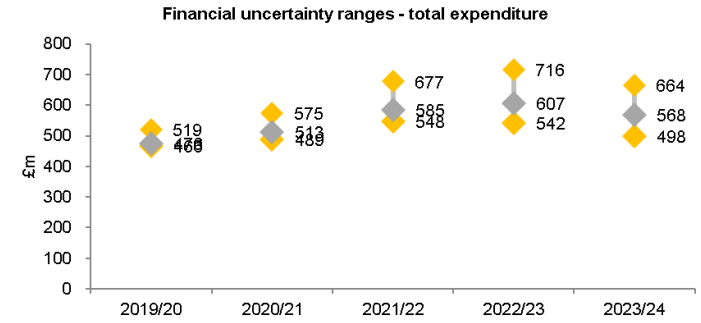
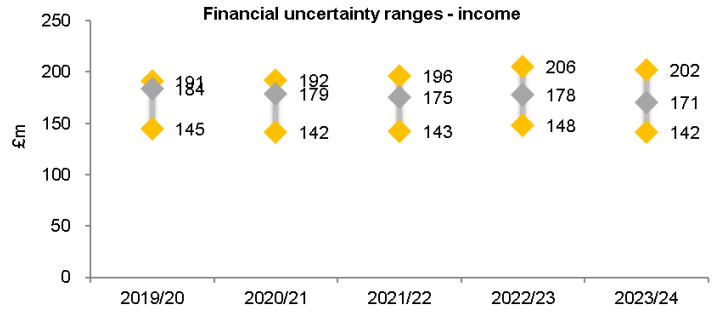
The combination of our core CP6 plan, headwinds/tailwinds and efficiencies/inefficiencies is our 'submission' and represents the 'most likely outcome' for CP6. However, it excludes any funding for financial risk that sits in our plan.

Whilst it is difficult to precisely estimate the likelihood of delivering our plan in CP6, it seems reasonable to suggest that, overall, there is a 45% to 55% likelihood of the outputs in the plan being delivered for the forecast cost in our CP6 plan (i.e. our plan is set at around P50). This means that approximately half of the time, we will be able to deliver our plan for the forecast cost. However, financial uncertainty varies between expenditure categories. For example, we consider that there is significantly more uncertainty in our renewals plan than in the support, operations and maintenance plans in CP6. Our analysis also shows that there is significantly more financial uncertainty in later years of the control period.

Figure 11.1, below, presents our estimate of the overall range of financial uncertainty across our income and expenditure for CP6. It also identifies the main drivers of the uncertainty ranges. The information in this table is based on route analysis of the financial uncertainty in support and operations, maintenance and renewals costs, and income. The spot values in Figure 11.1 include headwinds and efficiencies. The financial uncertainty ranges represent our assessment of the outturn income and expenditure that could occur in 95% of scenarios in CP6.

Figure 11.1: CP6 financial uncertainty ranges

Area	Potential range (low – spot – high)	Summary of key drivers of the uncertainty range	% of range	
		Driver of range	Lower %	Upper %
Renewals		Deliverability of forecast efficiencies	-11%	27%
		Annualised budgets and early GRIP enhancement included within the rout plan	-5%	14%
		Cost of supplier and contractor costs	-6%	11%
		Weather and other serious incidents	-3%	9%
		Availability of access	-6%	4%
Maintenance		Deliverability of forecast efficiencies	0%	30%
		Availability of access	0%	26%
		Understanding of maintenance and/or renewals work banks	-35%	6%
		Impact of changes in traffic	0%	10%
		Changes in policy and practises e.g. asset policies, fatigue management or new standards	0%	6%

Area	Potential range (low – spot – high)	Summary of key drivers of the uncertainty range	% of range	
		Driver of range	Lower %	Upper %
Support and operations		Deliverability of forecast efficiencies - Risk that identified efficiencies are not fully delivered	0%	38%
Total expenditure		Renewals uncertainty increases towards the end of the control period. This will reduce as future works move through planning and delivery Maintenance uncertainty remain at a constant level throughout the control period which is reflective of the constant and cyclical nature of maintenance activity. The primary area of uncertainty within support and operations is that of delivering the target level of efficiencies. Delivery of efficiencies accounts for a large proportion of the uncertainty within the plan and delivering the challenging level of targeted efficiencies will required focus throughout the control period. Milestone plans for all efficiencies are in place and reviewed on a 4-weekly basis.	-7%	15%
Income		Access charging income	0%	33%
		Schedule 4	-8%	0%
		Schedule 8	-84%	50%
		Other income	0%	0%

12. CP6 regulatory framework

This section sets out our latest forecast of expenditure and income for CP6, and also how our forecasts compare to the assumptions ORR made in calculating our CP6 route funding settlement. Consistent with ORR's PR18 final determination, the tables in this section include route-incurred, and allocated, expenditure and income.

CP6 expenditure forecast

In Table 12.1, below, we provide our latest CP6 forecast of expenditure. The forecast, below, will act as the baseline against which ORR measures financial performance in CP6.

Table 12.1: CP6 expenditure forecast

£m in cash prices	19/20	20/21	21/22	22/23	23/24	Total	Other	CP6
Support	22	2	14	16	16	**69**	262	**331**
Operations	54	54	55	54	53	**270**	6	**276**
Maintenance	173	184	177	183	189	**907**	26	**932**
Renewals	240	273	339	355	310	**1,518**	299	**1,817**
Schedule 4 & 8	18	25	32	39	31	**144**	18	**162**
EC4T, industry costs and rates	0	0	0	0	0	**1**	419	**420**
System Operator						**0**	41	**41**
GPF: route	0	13	19	19	15	**67**	0	**67**
GPF: contingent asset management	0	14	16	19	45	**94**	0	**94**
GPF: centrally-held						**0**	106	**106**
Total costs	**508**	**566**	**652**	**684**	**659**	**3,070**	**1,176**	**4,246**

In calculating the route funding settlement for CP6, ORR made assumptions about our costs. Table 12.2, below, compares our CP6 business plan expenditure forecasts with ORR's PR18 final determination assumptions.

Table 12.2: Business Plan vs. Final Determination expenditure assumptions

£m in cash prices	CP6 Business Plan			Final Determination			Variance		
	Route	Other	CP6	Route	Other	CP6	Route	Other	CP6
Support	69	262	**331**	20	208	**228**	-49	-54	**-103**
Operations	270	6	**276**	358	9	**367**	88	3	**90**
Maintenance	907	26	**932**	811	53	**865**	-95	28	**-68**
Renewals	1,518	299	**1,817**	1,546	297	**1,843**	28	-2	**26**
Schedule 4 & 8	144	18	**162**	137	0	**137**	-6	-18	**-25**
EC4T, industry costs and rates	1	419	**420**	0	441	**441**	-1	23	**21**
System Operator	0	41	**41**	0	29	**29**	0	-12	**-12**
GPF: route	67	0	**67**	79	0	**79**	12	0	**12**
GPF: contingent asset management	94	0	**94**	114	0	**114**	20	0	**20**
GPF: centrally-held	0	106	**106**	0	113	**113**	0	7	**7**
Total costs	**3,070**	**1,176**	**4,246**	**3,066**	**1,150**	**4,216**	**-4**	**-26**	**-30**

***Please note**: ORR's PR18 final determination did not separately identify the costs allocated to routes from route-incurred costs. However, the table, above, identifies allocated costs based on underlying information from ORR's analysis.*

CP6 income forecast

The expenditure in Table 12.1 needs to be paid for. In Table 12.3, below, we provide our latest CP6 income forecast. Our charging income forecast reflects our latest forecast of CP6 traffic levels and is consistent with final CP6 price lists.

Table 12.3: CP6 income forecast

£m in cash prices	19/20	20/21	21/22	22/23	23/24	Route	Other	CP6
Variable charges (VUC, EAUC)	-22	-26	-27	-27	-28	**-130**	0	**-130**
Stations LTC	-21	-21	-22	-22	-23	**-109**	0	**-109**
EC4T	0	0	0	0	0	**0**	-257	**-257**
Schedule 4 ACS	-17	-18	-19	-20	-14	**-87**	-27	**-114**
FTAC	-83	-79	-79	-84	-71	**-396**	-87	**-484**
Network Grant (SOMR)	0	0	0	0	0	**0**	-1,852	**-1,852**
Income from FNPO	0	0	0	0	0	**0**	-794	**-794**
Other single till income	-48	-50	-50	-51	-53	**-253**	-132	**-385**
Income within scope of PR18	**-192**	**-193**	**-197**	**-205**	**-188**	**-975**	**-3,149**	**-4,124**

***Please note**: Government grants for corporation tax, financing costs, BT Police costs and enhancements were not agreed as part of ORR's final determination but we have included them in our forecast of income for completeness.*

In calculating the route funding settlement for CP6, ORR made assumptions about the amount of income we will receive from charges and other income. Table 12.4, below, compares our CP6 business plan income forecasts with ORR's PR18 final determination assumptions.

Table 12.4: Business Plan vs. Final Determination income assumptions

£m in cash prices	CP6 Business Plan			Final Determination			Variance		
	Route	Other	CP6	Route	Other	CP6	Route	Other	CP6
Variable charges (VUC, EAUC)	-130	0	**-130**	-150	0	**-150**	-21	0	**-21**
Stations LTC	-109	0	**-109**	-110	0	**-110**	-1	0	**-1**
EC4T	0	-257	**-257**	0	-270	**-270**	0	-13	**-13**
Schedule 4 ACS	-87	-27	**-114**	-137	0	**-137**	-50	27	**-24**
FTAC	-396	-87	**-484**	-484	0	**-484**	-88	87	-0
Network Grant (SOMR)	0	-1,852	**-1,852**	0	-1,856	**-1,856**	0	-4	-4
Income from FNPO	0	-794	**-794**	0	-794	**-794**	0	0	0
Other single till income	-253	-132	**-385**	-249	-166	**-415**	4	-34	-30
Income within scope of PR18	**-975**	**-3,149**	**-4,124**	**-1,130**	**-3,086**	**-4,216**	**-155**	**63**	**-92**

13. Sign-off

This document and accompanying templates are owned by the Route Managing Director (RMD).
Submission of this document indicates confirmation that:

- **all appropriate level 1 assurance activities have been undertaken (see separate advice on definition of level 1 assurance);**
- **the RMD is satisfied with the quality, currency and appropriateness of the content of this document as well as the cost, volume and activity projections to which it refers;**
- **the signatories are satisfied that the plan has been assessed as deliverable, subject to the assumptions articulated in Appendix B.**

Authorised by:

Signed Mark Langman	Mark Langman Route Managing Director	Date: 1st March 2019
Signed	Mike Gallop Director, Route Asset Management	Date: 1st March 2019
Signed L. Watkins	John Watkins Route Finance Director	Date: 1st March 2019
Signed Tim Ball	Tim Ball Chief Operating Officer	Date: 1st March 2019
Signed	Neil Thompson IP Regional Director	Date: 1st March 2019

Appendix A Stakeholder Engagement

Our stakeholders

Our stakeholders are many and diverse, spread across the route and beyond, and include:

Lead train operators	Other train operators	Freight operators	Funders and government	Industry groups	Others
Great Western Railway **Heathrow Express**	CrossCountry West Midlands Trains MTR Crossrail Transport for Wales South Western Railway	Freightliner Intermodal Freightliner HeavyHaul DB Cargo DRS GBRf Colas Rail	DfT Local and Combined Authorities, including sub-national transport bodies Local Enterprise Partnerships	RDG Transport Focus	ORR Passengers Local business groups Heathrow Airport Environment Agency

Stakeholder engagement

In developing our CP6 plans we are engaging with a wide range of stakeholders through a series of workshops and written invitations to contribute. We adopted a multi-channel engagement approach, summarised in the diagram, right.

Aside from a series of bi-lateral engagement with our customers and other stakeholders, in February and March 2017 we held four workshops where we met with 73 people from 45 separate organisations, seeking stakeholder views on our outline plans, and to understand their ambitions for the future and how Network Rail can contribute to them. Written feedback was also sought via an online survey and was incorporated into the workshop feedback.

A further series of workshops was held in June 2017, where we held three workshops meeting with 49 people from 40 separate organisations, updating our stakeholders on progress since the first round of workshops, and seeking their views on our scorecard and the role of Network Rail's System Operator function. As with the first round of workshops, written feedback was also sought via an online survey and was be incorporated into the workshop feedback.

This was then followed by a further round of engagement in autumn 2018, with three further workshops attended by 30 individuals where we were able to further update on progress with the Route Strategic Plan and the Periodic Review process, notably the ORR's Draft Determination. We also worked with System Operator colleagues and were able to reflect to our stakeholders how their feedback had influenced the direction and narrative of our strategic plan. Once again, we also used an online survey to gather further feedback from our stakeholders.

Bi-lateral engagement with our lead train operators on CP6 plan development has also been undertaken. Most engagement concentrated on the detail of the CP6 planning process, but has included overviews of signalling and track renewals workbanks. We also met with Transport Focus to discuss passenger concerns about industry performance metrics, and the Rail, Maritime and Transport Union to discuss our overall approach to CP6.

In addition, there continues to be regular engagement with our stakeholders as part of our normal business activities, covering a wider range of issues, which can include CP6 activity where appropriate, as outlined below:

Topic	Engagement approach	Route lead	Stakeholders involved
General	Route Supervisory Board	Route Managing Director	All Western lead TOCs, Transport Focus, System Operator and DfT
General	Level 1 Directors' liaison meetings	Route Managing Director	All Western lead TOCs
Performance	Performance Exec, Area Business Reviews Quarterly Performance Strategy Review	Head of Performance	All Western lead TOCs
Network improvements and changes	Quarterly Route Investment Review Group meetings Enhancement scheme boards and delivery group meetings	Head of Strategic Planning Route Managing Director	TOCs and FOCs operating on Western route
Access Planning	Access planning process	Head of Route Planning	All Western lead TOCs
Timetable planning	Capacity Planning Working Group	Head of Operations Delivery	TOCs and FOCs operating on Western route
Stations & depots	Local delivery groups	Route Enhancements Manager Route Asset Manager	All Western lead TOCs
CP6 liaison	1:1 meetings	Route Asset System & Integration Manager	All Western lead TOCs, CrossCountry, MTR Crossrail
Cross-route	Engagement with Freight & National Passenger Operators team	Route Asset System & Integration Manager	CrossCountry

Stakeholder feedback

Following the two rounds of stakeholder workshops, common themes have been identified across the different stakeholders. The workshops asked twelve broad questions with regards to the Route Strategic Plan:

a. Stakeholder requirements (workshop round one)
    1. What are the most important outputs for our stakeholders?
    2. Does the strategic vision align with stakeholder requirements?
    3. What is needed for our stakeholders to be successful?
    4. What could be done collaboratively to reduce the whole industry cost through the strategic plan?

b. Scorecard (workshop round two)
    5. What are your views on our Scorecard?
    6. Are there too many metrics, or some which are missing?
    7. Should the finance metrics be part of the scorecard or should they be measured separately?
    8. Is the NRPS (National Rail Passenger Survey) the best way to measure passenger satisfaction with Network Rail?

c. Stakeholder requirements (workshop round three)
    9. What do you need Network Rail to know about your business, your priorities and your future plans?
    10. What more do you need from Network Rail?
    11. What aspects of how we work together can be improved?
    12. What are your priorities for strategic planning of the rail network?

Feedback from each of the workshops has been reviewed and analysed using either a grounded analysis methodology, which was carried out in two stages for questions 1 - 4 and 7 & 8, a SWOT analysis for questions 5 & 6, or qualitative assessment (questions 9-12). This allowed common answers, questions and sentiments to be identified without any predefined expectations.

The first stage of analysis was to study the feedback given by each group from each of the workshops, then group common feedback and answers into categories. The second stage was to take a holistic view of the feedback that had been collected, identify common categories from all workshops then group these into common themes. This approach means that the priorities and concerns of all stakeholders have been considered.

Theme	Description	How could this be addressed?
Economic growth	Economic growth is considered a key output for many stakeholders. The railway should be seen as a catalyst for growth to create more jobs and housing opportunities.	Promote interconnectivity between cities. Promote housing and jobs in partnership with the railway, through integrated strategic plans. Have economic benefits play a stronger part of the vision.

Third party engagement	Network Rail should maintain engagement with third parties to ensure that there is an alignment of outcomes and strategies. Network Rail is too hard to engage as a company. Network Rail's communications need to be clear and regionally focused with clarity on our long-term plans	Increased communications. Stakeholder engagement and development of integrated plans Develop third party strategies to fund projects
Alternative funding	When addressing the different methods of reducing costs, many stakeholders identified different methods of funding which can be used to reduce the cost to Network Rail.	Bring in more third party funding. Mature, affordable schemes. Adjust franchise agreements. Alliance funding. Choices for funders pipeline of proposals Look into smaller schemes which can be 'pulled off the shelf'
Enhancements	Enhancements should include upgrade of equipment as well as capacity upgrades to stations.	Bring in more third party funding. OMR to include incremental improvement & enhancement. Network Rail could enhance its product as it carries out capital renewals in CP6, as part of a long-term strategy. Vision could have more focus on enhancements over renewals.
Performance	Performance is defined by many factors. These include: Reliability, Resilience, Capacity and Timesaving. The need for improved and sustainable, reliable performance.	Consider alternative ways we measure performance (PPM). Increased focus on reliability, resilience and capacity. A clear performance improvement plan with specific interventions to improve reliability.
Passenger experience	The end to end experience of a train journey for the passenger is an important factor across the board for our stakeholders. Improving journey times and connectivity is a clear driver of satisfaction. Information provision to passengers during planned and unplanned disruption needs to be improved.	Explicitly state in the vision how the passenger is Network Rail's customer. Address capacity issues. Improve mobile connectivity. Alliance working together. Successful delivery of timetable changes introducing additional services and journey opportunities. Improved passenger information.
Scorecard: strengths	Provides overview of route performance in CP6. Grouping of metrics into categories makes the scorecard more accessible and relevant to all parties interested.	Continue to display scorecard metrics clearly by category
Scorecard: weaknesses	Individual station-specific metrics do not accurately represent train performance across the route. Greater clarity on measures is needed. A number of potential metrics are missing (including economic growth, environmental impact, level crossing safety, station safety, customer disruption)	Provide clarity on metrics. Add further metrics to the scorecard.

Scorecard: opportunities	Include a metric to cover overall passenger journey experience (door to door), include additional customer satisfaction, third-party funding, economic growth, environmental benefit and connectivity metrics.	Add further metrics to the scorecard.
Scorecard: threats	Scorecard could become too complex if all potential metrics included. Lack of alignment between NR and train operator outcomes.	Carefully manage the number of metrics on the scorecard. Seek to align train operator and NR performance targets.
Inclusion of finance metrics on the scorecard	Broad agreement that financial metrics should be available, but mixed views as to whether relevant to include on the route scorecard.	Continue to include financial metrics on the route scorecard.
Use of the National Rail Passenger Survey to measure passenger satisfaction	There are some perception and influence issues with the NRPS, so greater use of direct survey and social media should be made.	Measure passenger satisfaction through other means, as well as the NRPS.
Passenger and community safety	The need to keep focused on keeping passengers and communities safe	Inclusion of a clear safety plan in the route strategic plan, and specific interventions to reduce level crossing risk

In addition, our bi-lateral and routine engagement identifies the following stakeholder needs:

Theme	Description	How could this be addressed?
Capacity improvement	Delivery of capacity improvements to time and budget	Cover as part of the Enhancements Delivery Plan
	Reduce journey times (through infrastructure intervention)	Cannot be addressed under current renewals or maintenance plans except in very limited circumstances. Investment opportunities are subject to funding.
	Address pinchpoints and other asset issues	Cannot be addressed under current renewals or maintenance plans except in very limited circumstances
	Increase train frequencies	Specify additional train services, however, in recent franchises, more paths than the infrastructure can reliably accommodate have been specified
	Extend hours of train operation (late night / early morning and weekends)	Specify additional train services, however, increasing hours of operation will impact on white period durations used for maintenance
Performance delivery	Delivery of performance levels for franchises	Joint strategies with each TOC allowing sensible targets to be set and realistic plans to be implemented. However, this will be challenging with continuing traffic growth, disruption from HS2 on the network and with our supply chain, and declining asset condition in certain areas

	Minimise delay per incident	Joint strategies with each TOC allowing sensible targets to be set and realistic plans to be implemented. This is an industry challenge and not just one which NR can solve; we will work with our TOCs and FOCs to reduce.
Passenger experience	Invest in stations	Our asset policies target the maintenance of conditions at current levels. Enhancements will require external funding.
System operation	Train planning resources	Ongoing discussion with capacity planning teams to influence provision of further resource and retain train planning staff

Addressing stakeholder feedback

We have worked within the financial and operating constraints to incorporate the varied items of stakeholder feedback received. Where there have been conflicting requirements we have sought to balance the different priorities we have been advised of to date, principally though qualitative assessment. There have also been some items of stakeholder feedback which we have been unable to take forward due to the constraints of this process, notably with respect to funding the Western Rail Link to Heathrow Airport (which as an enhancement is not part of this plan). We also note that our proposed scorecard outputs remain draft until agreed with our customers and, in particular, the level of disruption and funding of mitigations by HS2 have been clarified.

A summary of the line of sight of stakeholder feedback to our plan is shown in section 1. Our detailed responses to stakeholder feedback include:

Theme	Issue	Response
Economic growth	Need to work together better with our stakeholders on growing the economy through rail	An Alliance workstream has been set-up with GWR to build an aligned approach to business development Our route supervisory board also has a role in bringing together stakeholders, as does the contribution of third-party finance to the railway
Alternative funding	Need to attract greater third-party investment to rail	Route has appointed a Business Development Director
Enhancements	Need to do incremental enhancements when doing renewals	We have set up a renewals planning review group to identify incremental enhancement opportunities
	Need to prioritise Western access to Heathrow Airport	This remains an enhancements choice for funders, but we have revised our route strategic plan to make this option clearer. We will continue to support stakeholders to secure funding for this scheme.
Performance	Passengers don't like or trust our existing performance measures	Our performance plan has been recast to record and forecast "on time" performance at all recorded stations. This is now included on the scorecard.

Other	Route vision needs to include more on the environmental benefits of rail	The route vision has been revised to reflect stakeholder feedback
	Network Rail's route boundaries in the Worcester area need review	A joint review has been agreed with LNW route and project managers appointed to scope a potential boundary change
Scorecard	Individual station-specific metrics do not accurately represent train performance across the route.	This refers to a metric of CrossCountry train performance at Bristol Parkway, which was nominated to the scorecard by CrossCountry, and remains on our scorecard at their request.
	Greater clarity on measures is needed.	The detailed scorecard supporting document now includes definitions.
	Include a metric to cover overall passenger journey experience (door to door), include additional customer satisfaction, third-party funding, economic growth, environmental benefit and connectivity metrics.	Scorecard metrics have been added to cover train accident and level crossing risk reduction milestones.
	Scorecard could become too complex if all potential metrics included.	Noting this point, not all the suggested metrics have been able to be taken forward; the scorecard needs to be customer-focused and balance internal and external metrics.
	Lack of alignment between NR and train operator outcomes.	The scorecard process, and the performance planning process, allow for greater discussion and alignment between NR and TOCs for performance outcomes.
	Broad agreement that financial metrics should be available, but mixed views as to whether relevant to include on the route scorecard.	Financial metrics have been included on the scorecard for visibility and transparency. Our funding management and efficiency delivery is a key priority of our business
	There are some perception and influence issues with the NRPS, so greater use of direct survey and social media should be made.	NRPS is included on the scorecard for consistency with other routes, and as it is Transport Focus' preferred metric. Our customers also note the profound impact that NR activity can have on NRPS scores, and that NRPS is often a franchise metrics. Measurement of social media is now being undertaken by the route communications team
Capacity improvement	Delivery of capacity improvements to time and budget	The scorecard includes tracking of enhancement milestones and financial performance of enhancements. The route governance structure has been improved to focus attention on achieving timely delivery
	Reduce journey times (through infrastructure intervention)	A study examining the benefit of infrastructure improvements between Totnes and Hemerdon to achieve faster journey times will be carried out in early CP6 (as recommended in the "Speed to the West" study)

	Address pinchpoints and other asset issues	We have set up a renewals planning review group to identify incremental enhancement opportunities
	Increase train frequencies	We have set up greater dialogue and liaison with DfT about appropriate franchise specification
	Extend hours of train operation (late night / early morning and weekends)	We have set up greater dialogue and liaison with DfT about appropriate franchise specification, and are introducing a risk-based maintenance regime for Paddington – Reading to respond to the reduction in maintenance access. A minimum of access for maintenance will be required, however.
Performance delivery	Delivery of performance levels for franchises	Our scorecard performance objectives are linked to our core asset plans and are subject to regular monitoring
	Minimise delay per incident	
Passenger experience	Invest in stations	Alliance workstream set-up with GWR to build an aligned approach to business development to drive investment in our stations. Our core plan includes the renewal of the roof at Bristol Temple Meads which will improve passenger experience at this station.
	Provision of passenger information during disruption	Review and improve, with TOCs, the information available for passengers during unplanned disruption
		Work that all planned disruption is communicated, in advance, with appropriate TOCs, to relevant passengers, communities, businesses and other stakeholders
System operation	Train planning resources	We have ongoing discussion with capacity planning teams to influence provision of further resource

Continuing engagement

We aspire to be recognised for the quality of our stakeholder engagement through objective assessment, with a reputation of being open, honest and easy to work with. We aim to be a good neighbour in all we do and to be a respected source of information and advice for those wishing to invest in our railway.

We will have a well-documented, multi-channel engagement strategy, with an effective range of engagement approaches and a customer-relationship management approach to managing contacts so that we can understand our stakeholders and measure our engagement performance.

We will have an integrated strategy which allows multiple contacts but recognises the need for a consistent message and a joined up position to our stakeholders. We will use our stakeholders feedback to inform our plans, and effectively feed back on how our stakeholders are making a difference to us.

Overall, we aim for stakeholder engagement to be embedded in our business process and culture, placing our stakeholders at the heart of everything we do.

To meet this aim we will form a small steering group to co-ordinate and align our stakeholder engagement on the route, including colleagues from System Operator. We will document our stakeholder engagement to allow our relationships to be mapped and our stakeholders engaged effectively, and implement a CRM approach to allow interactions to be successfully managed, commitments kept and a richer understanding of our stakeholders to be developed.

We will implement an annual assessment of our stakeholder engagement to understand and improve the effectiveness of our approach and produce an annual stakeholder report to document our engagement

Appendix B Key assumptions

Ref no.	Topic	Assumption	Areas of spend impacted
WES-CP6-Fin-A-02	Enhancements	The route business plans do not take into account any new committed enhancements post 26/5/2017, or arising from refranchising. This is typically projects that move into GRIP 6. Change control will apply to the enhancements to align with OM&R plans as it is assumed that future enhancement project funding will also allocate additional funds to the route to cover incremental operating, maintenance, support and renewal costs and any shortfall in income.	All areas, capex and opex
WES-CP6-Route-A-12	Unit Rates	The unit rates used for the submission are calculated based on current H&S regulations and requirements. No allowance is made for further tightening of H&S regulations led by either external organisations or internal to Network Rail, as it is assumed that there will be no significant changes to health, safety and environmental legislation or any additional requirements imposed by the ORR above today's standards.	All areas, capex and opex
WES-CP6-Main-A-07	Standards Changes	No allowance has been made for the impact of Standards or Policy changes made during CP6. It is assumed that cost implications of changes are accounted centrally and provisions made by Standards Owners.	All areas, capex and opex
WES-CP6-E&P-A-10	Overhead line	The Great Western Electrification programme deliver against the route Project Requirements Specification in relation to a 5 minute permit to work. Failure to meet this requirement will have an impact on Opex and the resource levels within the OLE maintenance teams.	Maintenance opex
WES-CP6-E&P-A-09	Overhead line	The isolation and earthing strategy and equipment being implemented by the Great Western Electrification programme is accepted by the ORR with no requirement for additional infrastructure or funding from the E&P business plan.	E&P capex
WES-CP6-E&P-A-17	TPCMS SCADA	No allowance or consideration has been made for transfer to, or up keep of TPCMS SCADA.	E&P capex and opex
WES-CP6-CRE-A-01	Franchise	GWR refranchising does not change the volume of Lead Customers on the route with one franchisee for existing GWR route map area	All areas, capex and opex
WES-CP6-Route-A-04	Refranchise	Customer requirements after refranchise will be the same as at the time of submission.	All areas, capex and opex
WES-CP6-CRE-A-05	Franchise	No provision is made for any works required to facilitate the introduction of any new or changed rolling stock as a result of the franchising process.	All areas, capex and opex
WES-CP6-CRE-A-04	HEx	No provision is made for change to Heathrow Express Track Access Contract which is due to expire in 2023	All areas, capex and opex
WES-CP6-Bld-A-01	Managed Stations	Managed Station portfolio of Paddington, Reading and Bristol Temple Meads remains unchanged.	All areas, capex and opex

Ref no.	Topic	Assumption	Areas of spend impacted
WES-CP6-Bld-A-03	GWR franchise	New GWR Franchise operational property regime will be per the existing arrangements.	Maintenance, opex
WES-CP6-Route-A-16	HS2	The following HS2 enabling schemes are assumed to be funded for CP6 by HS2: OOC Hex Depot relocation (Langley), OOC FGW West Ealing Sidings Phase 2, HS2 ONW South (OOC enabling, GWML Station, Wil), OOC GWML Station, OOC enabling works, OOC Willesden Euro (HOOB), OOC Depot Decommissioning, HS2 ONW Ground investigation, HS2 ONW HS2 HALO, PH1 enhance - HS2 mass haulage strategy	All areas, capex and opex
WES-CP6-Fin-A-06	OMR costs and income	No Impact of HS2 on costs and efficiencies built into the plan. It is assumed that HS2 will re-imburse such costs or lost revenue.	All areas, capex and opex
WES-CP6-Trk-Bld-A-08	Stepping distances at Crossrail stations	Any required correction or adjustment to stepping distances at stations to be used by Elizabeth line services or other new trains will not be funded through renewals.	Track and buildings, capex and opex
WES-CP6-Trk-A-02	Access	Minimum of 8 hour midweek access is available for the delivery of High Output campaigns. 9 hrs will be available in axle counter areas	All areas, capex and opex
WES-CP6-Trk-A-06	Rail milling	Rail milling technology and resource will be available to the route to treat rolling contact fatigue.	Track capex
WES-CP6-Sig-A-11	Digital Railway	For the RF6 submission it is assumed that the Western route does not have a traffic management system operating at the start of CP6. However, we are working closely with Resonate to trial their implementation of traffic management in CP5 in order to establish the benefits which would be derived from this technology.	Operations opex, signalling capex
WES-CP6-Bld-A-18	Didcot Core Node	Didcot Core Node will be transferred to NRT	Buildings capex
WES-CP6-Data-A-03	Intelligent infrastructure	The Intelligent Infrastructure programme delivers the various tools and systems required	All areas, opex
WES-CP6-SHE-A-04	Level Crossing Risk Reduction	The route will achieve the necessary external permissions to enable planned level crossing closures to take place.	Safety and signalling, capex
WES-CP6-SHE-A-06	Home Safe Plan	National programmes contained in the Home Safe Plan will be delivered and funded nationally.	Safety, opex
WES-CP6-Route-A-01	Boundary Change	Assets which will transfer to LNW route as part of the proposed boundary change have been included in the Western RSP. The areas controlled by following signal boxes which currently form part of Western route will be resignalled and control transferred to LNW route: Droitwich Spa; Henwick; Ledbury; Malvern Wells; Newland East; Norton Junction; Worcester Shrub Hill; Worcester Tunnel Junction.	All areas, capex and opex
WES-CP6-SHE-A-12	LTIFR target	Lost time injury frequency rate target is set to compare to the best of other industries such as oil and gas. However, the criteria used by other such industries vary from how Network Rail currently measures LTIFR. As a result it is recognised that there will need to be a level playing field with which to compare NR's LTIFR, which will require changes to the definition of what incidents are counted as lost time injuries in Network Rail	Safety scorecard, opex

Appendix C Route context

Stretching from the heart of London to the Atlantic coast, the Western route is vast and diverse and faces a unique set of challenges.

The route has two key axes. One runs from London to South Wales, via Reading, Swindon and Bristol Parkway. The other branches off at Reading and leads to the far Southwest at Penzance, taking in Newbury, Taunton, Exeter and Plymouth along the way. Around that are lines to Oxford, Worcester, Gloucester, Cheltenham, and a host of branch lines from the Thames Valley to Cornwall.

The route borders the Wessex, Wales, Anglia and London North Western routes, and serves seven passenger train operators, who between them run over 2,200 trains on the network each day, both within and beyond the Western's borders. The route also contains several dedicated freight lines, including the second busiest freight corridor into London, which is used by DB Cargo and Freightliner. More than 1,000,000 freight miles are covered each year.

Western is a mixed traffic route with a maximum line speed of 125mph and track categories from 1A (between Reading and Paddington) to 5. The capacity constraints of the route lie between Swindon and Paddington.

The criticality map for Western route is shown right. The volume of train movements on the Western route is 447,000 per annum; Western route accounts for 6% of the national train movements.

Western Route Overview

198 stations

7 train operators covering two million train miles per year

1,850 track miles

£2.130bn CP5 operations, maintenance and renewals spend

2,700 colleagues

2,200 train services per day

347 suppliers

7,823 structures

Appendix D Scenario planning

Part 1a: Contingent renewals

This section describes the benefits of additional investment in the route which will be enabled should risks fail to materialise.

Schemes have been identified at a high level and include implementation of RATS within the Western route Crossrail footprint, implementation of Circuit Main Earth technology to facilitate safer and faster isolations of the overhead line, renewal and development of accommodation for the maintenance organisation and work to ensure safe access to the lineside. Further schemes will be added to the list of possible contingent renewals as the control period progresses and the realisation of risks becomes more apparent.

Package ID	Package title	Description	Capex (£m)	Opex (£m)	Justification for spend
RWES-CAMF-001	Rationalise Auto-Transformer System Protection Alignment	Implementation of the RATS system within the Western Route area of the Crossrail footprint to provide a single protection system on the route.	5	0	A single protection system will be used throughout the route ensuring that sufficient competent staff are in place to manage it.
RWES-CAMF-002	Safer Track Worker Access	Ensuring a safer lineside environment for all staff through a series of interventions to provide better access and remove hazards from site.	5	0	The lineside environment contains many hazards. Minimising these is the right thing to do for both our staff and suppliers working on the route. Supports the CP6 LTIFR targets
RWES-CAMF-003	Reading Campus	Enhanced accommodation for maintenance, project and route staff in Reading	8	0	Creation of a single site in Reading will reduce accommodation costs

Part 1b: Investment options

This section describes the benefits of additional investment in the route which will be enabled should risks fail to materialise.

Weather resilience	**CP6 total: (£m)**	£286.2m	**CP6 capex: (£m)**	£286.2m	**CP6 opex: (£m)**	£0.m	**Total BCR**	2.4	**Appraisal period**	60 years
Description	**Qualitative benefits**						**Quantitative benefits**			
Exeter to Newton Abbot resilience: a package of works to improve the resilience of the railway between Exeter and Newton Abbot to severe weather events, consisting of: • £10m to construct a rock-fall shelter at Clark Tunnel (Parsons Tunnel – Kennaway Tunnel section, near Dawlish); • £26.2m for seawall strengthening at Marine Parade, Dawlish (Kennaway Tunnel – Dawlish Warren section); • £250m for cliff face remediation and beach reclamation between Teignmouth – Parsons Tunnel.	Development and delivery of critical resilience and secure the coastal route between Exeter St Davids and Newton Abbot through Dawlish and Teignmouth, enabling the route to remain open to the South West during severe weather. The Programme is to be staged over multiple control periods; the timing of delivery of works is to align with the risk profile to the railway. Priority 1 sites which include work between Teignmouth and Parsons Tunnel, Parsons tunnel and Kennaway Tunnel and Dawlish and Kennaway Tunnel shall be developed in CP6 with substantial delivery in CP6, Priority 2 sites shall be developed during CP6 with delivery in CP7.					The consequence of not doing this programme would result in more frequent, sustained long periods of closure and service disruption with events akin to those during 2014 (currently a 1 in 25 year event) occurring on an annual basis by 2115, This incident saw the line closed for several months at a cost to Network Rail of £50m and an estimated impact on the local and regional economies of up to £1billion. Increases in future services on the route will mean that the impact of disruption cause by severe weather will be compounded with a greater number of services affected. GRIP 1 Business case appraisal for the whole programme has been undertaken indicating a BCR of 2.4 if considered over 60 years which falls into the DfT's high value for money category. However the resilience strategy has considered the resilience of this route over a 100 year period, when the BCR is calculated over this timeframe the BCR is more than 90 indicating a very high value for money classification.			

Further level crossing safety improvements	CP6 total: (£m)	£222.8m	CP6 capex: (£m)	£217.8m	CP6 opex: (£m)	£5.0m	Total BCR	0.05	Appraisal period	30 years
Description	**Qualitative benefits**						**Quantitative benefits**			
Level crossing safety reduction and asset improvement programme: a series of work packages to further reduce level crossing risk across the route through a variety of interventions, in addition to benefits already included in core plan. Each package is capable of being progressed separately to align with funding available.	**Package 1:** Facilitates capacity enhancement on key freight route (DCL); eliminates high-risk crossings; eliminates only remaining 2-track, high-speed station access crossing; reduces safety incidents; reduces risk of AHB failures impacting train service; reduces maintenance costs. CAPEX: £22.2m OPEX (CP6): £15k **Package 2:** Eliminates high-speed passive crossings; provides compliance with ORR level crossing guidance; reduces safety incidents. CAPEX: £12.6m OPEX (CP6): £450k **Package 3:** Eliminates requirement for whistle boards; ensures delivery of *Transforming Level Crossings – A long term strategy to improve safety at level crossings 2015-2040*; alignment with *Western route Strategic Route Asset Management Plan, May 2016*; provides compliance with ORR level crossing guidance; reduces safety incidents. CAPEX: £43.8m OPEX (CP6): £1.2m **Package 4:** Eliminates telephone protection at level crossings; ensures delivery of *Transforming Level Crossings – A long term strategy to improve safety at level crossings 2015-2040*; alignment with *Western route Strategic Route Asset Management Plan, May 2016*; eliminates signaller involvement in UWC operation; reduces safety incidents. CAPEX: £82.2m OPEX (CP6): £2.25m **Package 5:** Eliminates open crossings; reduces safety incidents. CAPEX: £12m OPEX (CP6): £150k **Package 6:** Provides compliance with ORR level crossing guidance; reduces safety incidents; significantly improves passive crossing asset condition and life; provides consistency of appearance across passive crossing estate. CAPEX: £15m OPEX (CP6): £960k **Package 7:** Ensures focus on crossing closures; provides means to pursue Transport and Works Act Order; provides dedicated closure resource and expertise. CAPEX: £30m OPEX (CP6): £0	**Package 1:** FWI benefit = 0.06073388. **Package 2:** FWI benefit (if closures) = 0.00771992. FWI benefit (if MSLs) = 0.00463195. **Package 3:** FWI benefit (if closures) = 0.02981013. FWI benefit (if MSLs) = 0.01788608. **Package 4:** FWI benefit (if closures) = 0.05525563. FWI benefit (if MSLs) = 0.03315338. **Package 5:** FWI benefit = 0.02276787. **Package 6:** FWI benefit = 0.00790022. **Package 7:** FWI benefit = 0.08308915. Reduction in user human error incidents at upgraded (MSL and ABCL) crossings of 100%.				

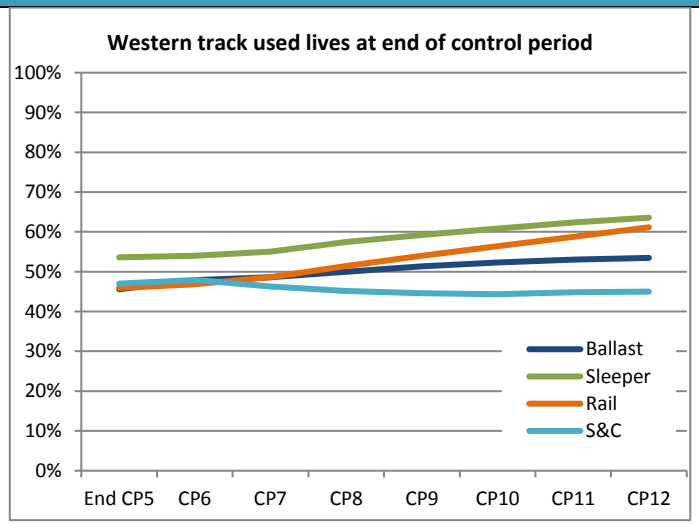
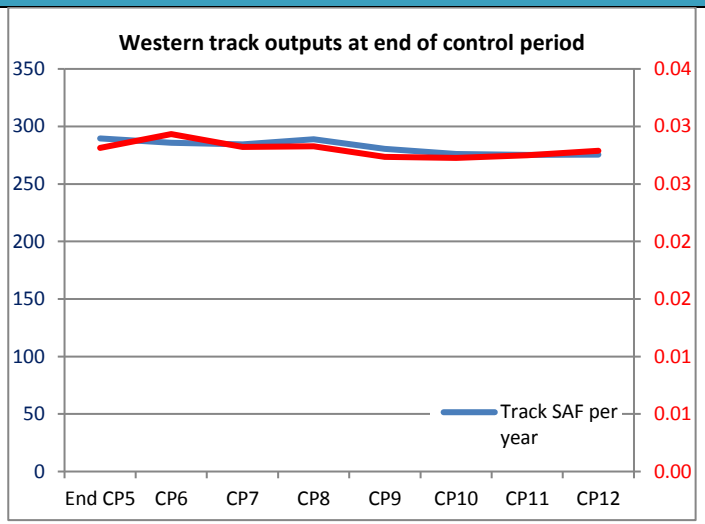
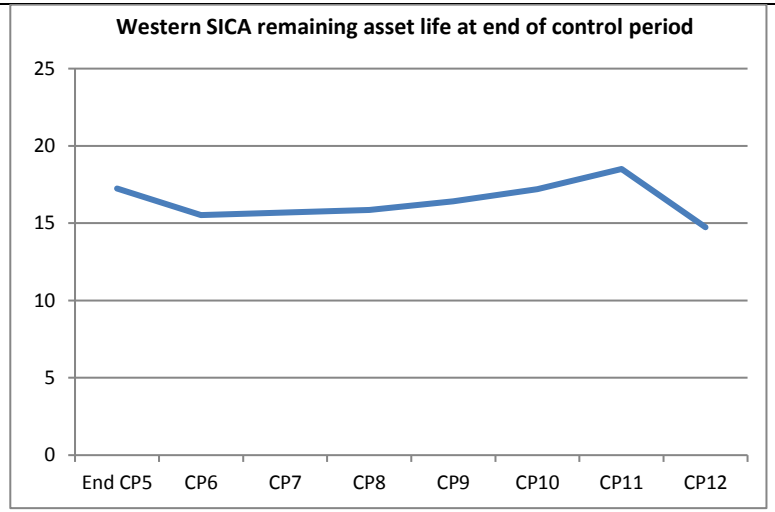
Part 2: decrease in total remaining expenditure for CP6

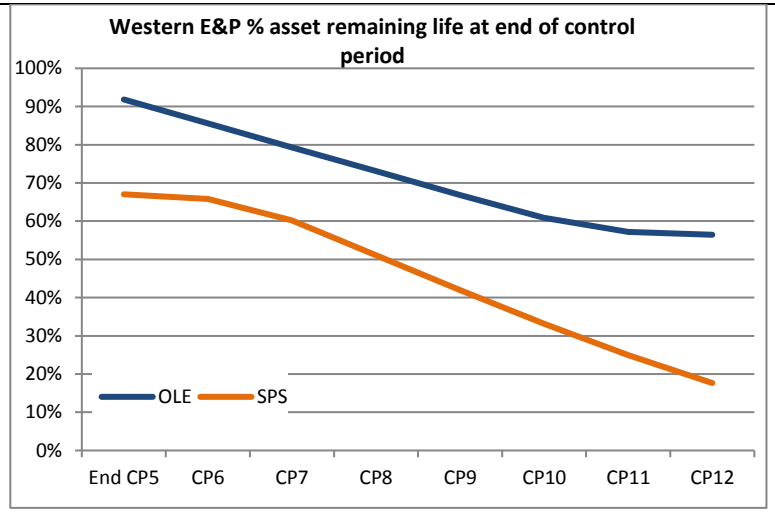
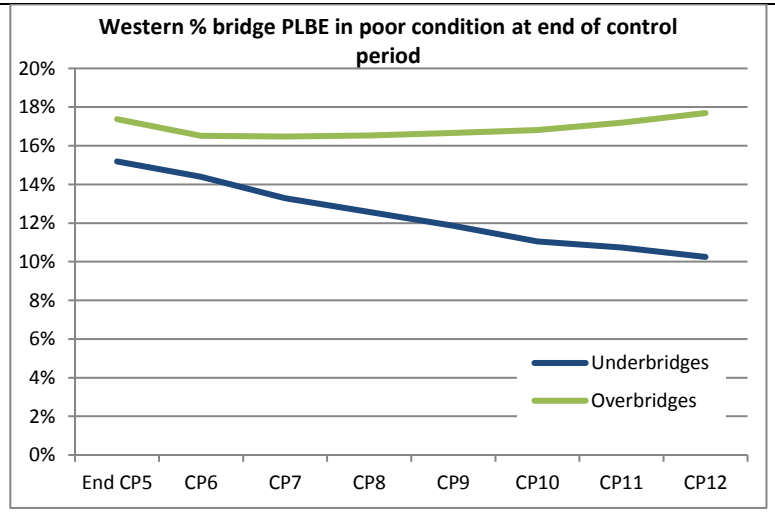
This section describes the impact of a 10% decrease in expenditure across CP6 based on all risk funding has been exhausted.

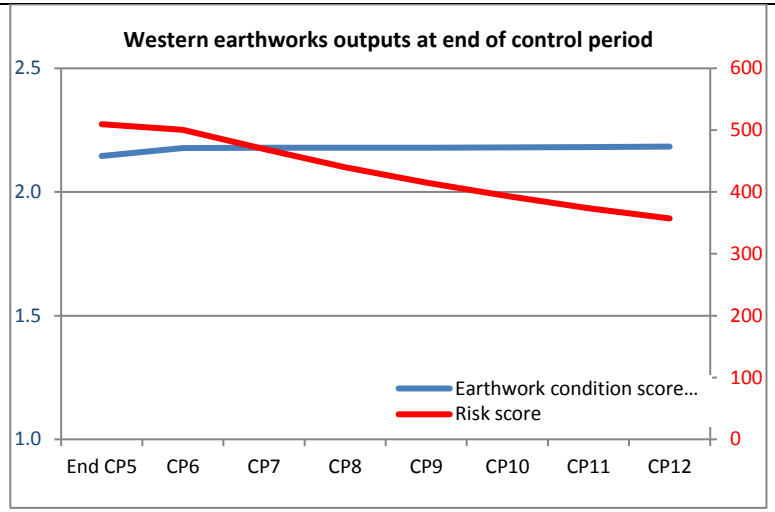
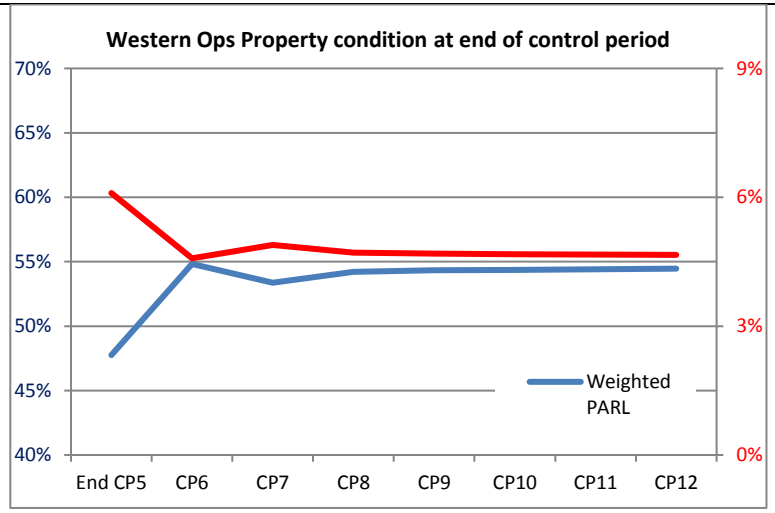
Asset	Outstanding CP6 expenditure	Maximum potential saving	Risk of curtailing expenditure				Comment on impacts/issues
			Safety	Performance	Sustainability	Reputation	
Track	£489m	£48m	G	A	R	A	Performance, sustainability and reputation would be impacted through lost renewals sites
Signalling	£458m	£46m	G	A	R	A	Performance, sustainability and reputation would be impacted through lost renewals sites
Structures	£190m	£19m	G	G	R	A	Sustainability and reputation would be impacted through lost renewals sites
Earthworks	£102m	£10m	G	G	R	A	Sustainability and reputation would be impacted through lost renewals sites
Drainage	£22m	£2m	G	G	R	A	Sustainability and reputation would be impacted through lost renewals sites
Buildings	£168m	£17m	G	A	R	A	Performance, sustainability and reputation would be impacted through lost renewals sites
Electrification & Plant	£89m	£9m	G	G	R	A	Sustainability and reputation would be impacted through lost renewals sites
Operations	£345m	£34m	A	R	G	R	Safety, performance and reputation would be impacted with a reduction in operations spend and the routes ability to respond to incidents
Maintenance	£866m	£87m	A	R	A	R	All measures would be impacted with a reduction in maintenance spend.
Support	£21m	£2m	G	G	G	G	A reduction in support funding is not thought to introduce significant additional risks
Total	£2,750m	£274m	G	A	R	A	Overall there is an increase in the risk to the route in the areas of performance, sustainability and reputation if funding were reduced. There would be a considerable increase in safety risk for maintenance and operations.

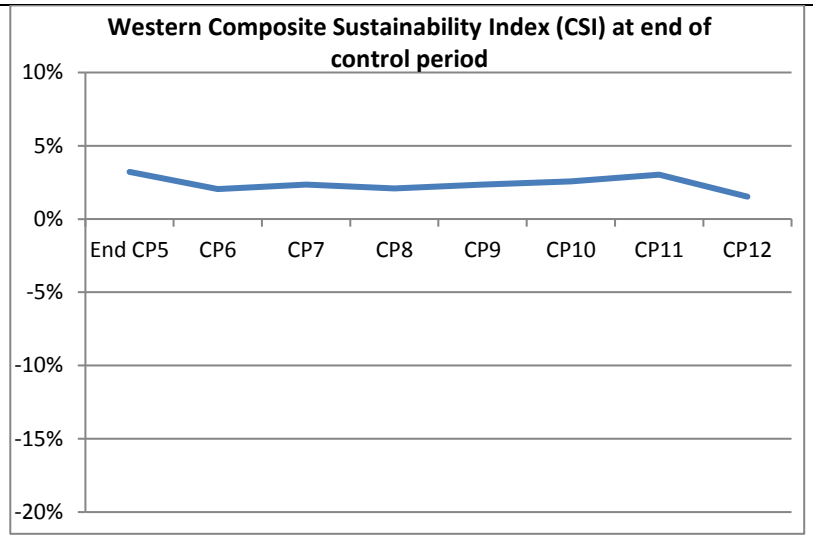
Key to risk colours - G: no additional risk, A: some additional risk, R: considerable additional risk

Appendix E Asset by asset long term forecast

Asset	Condition trajectory	Comment
Track	 	Forecast increased expenditure under the baseline scenario increases asset life, with consequent steady impact on service affecting failures. Constraining funding in the alternate scenario worsens asset life and performance and FWI outcomes.
Signalling		The planned resignallings for Worcester, Cornwall, Gloucester, Exeter and Westbury impact favourably on the remaining asset life remaining to CP11. Both scenarios assume this essential work is completed, albeit with phasing differences.

E&P			The forecast for long-term E&P asset life remaining is skewed by the lack of overhead line renewals in CP6 (due to the significant new construction in CP5), which is therefore not factored into future works by the forecast model. It is expected that there will be mid-life refurbishment works between CP7 and CP12 in order to sustain asset condition.
Structures			Both the baseline and constrained scenarios have similar outcomes with reductions in poor condition structures through to CP12, with similar, increased, spend profiles assumed in both scenarios, with more significant interventions due to an increase in metallic renewals works in future control periods, as 46% of structures assets are over 145 years old and earlier structures tended to be masonry construction and the age profile of metallic structures will increase.

Earthworks			The baseline scenario for earthwork assumes expenditure increases in future control periods with consequent improvements to condition and reductions in the risk score. Under the constrained scenario such favourable outcomes are not sustained, with a worsenment in risk score and condition.
Operational Property			Forecast outcomes for the buildings assets are similar between the two scenarios, with a minor worsenment in the constrained scenario compared to the baseline forecast, provided in both scenarios that sufficient funding is available for infrequent major interventions, such as managed station rewires and roof works which typically fall due every 25 years.

Composite sustainability index			Under the level of long term funding identified in section 6.4 of this document the sustainability of the network on Western Route slowly improves through to CP11. With the reduction in asset spend under a scenario constrained to CP6 funding in future control periods, the composite sustainability index is forecast to worsen beyond CP6.

Appendix F Freight and National Passenger Operators Route Plan

Western Route & Freight & National Passenger Operators (FNPO) Route

This summary sets out how the Western Route and FNPO routes will work together to deliver the Route Strategic Plan for Western. It outlines existing FNPO activity, and then describes the impact of the plans and aspirations of FNPO customers to grow and develop their businesses. It summarises what Network Rail needs to do to deliver these strategies and how, in doing so, efficiencies can be identified and realised.

National Passenger Operators:
CrossCountry is a regular user of Western route and key issues include right time departures from Bristol Parkway, weather resilience and trespass and fatality incidents

Charter trains also operate across Western Route, especially at weekends, to a variety of leisure destinations being hauled by both standard and heritage steam and diesel locomotives. This leisure market is expected to grow during CP6.

Challenges and Opportunities

No	Key Challenges, Risks and Opportunities	What we plan to do
1	**Aggregate Growth** O: Volume growth from quarries in Mendips and Wales to SE and Anglia O: Aggregate for export via Avonmouth O: Reactivation of rail connected quarries e.g. Tytherington R: Infrastructure not able to cope with traffic demand	• Explore opportunities for longer and heavier trains maximising loco capability • Facilitate new wagons that maximise payload/length ratio • Support terminal / yard developments e.g. proposed Southall Campus • Support introduction of 'pop-up' terminals, bringing out of use infrastructure back into use and increased use of lineside loading • Explore opportunities for new capacity
2	**Domestic & Deep Sea Intermodal Growth** O: Volume growth from Southampton will feed through Western R: Train paths and SRT discrepancies with longer, heavier trains	• Work with customers to maximise opportunities to increase length of trains • Look for opportunities to increase Average Journey Speed origin to destination •
3	**Gauge establishment** C: Establishment of recognised diversionary routes for gauge critical traffic	• Recognised Diversionary routes with adequate capability, completing the GRIP1 work started in CP5 on Bradford Junction to Bathampton Junction • Review of RT3973 provision to more closely align with traffic flows – reduced duplication
4	**Commodity Traffic Growth** O: New aviation fuel terminal at Colnbrook O: Increased movements from BMW Oxford via Southampton Docks O: Higher tonnages of steel shipped to EU from Wales will transit Western Route R: Brexit impact could affect commodity traffic adversely	• Explore opportunities for longer and heavier trains maximising loco capability • Develop new flow from Grain to Colnbrook • Look for opportunities to free-up capacity following the decline of Avonmouth coal • Support introduction of 'pop-up' terminals, bringing out of use infrastructure back into use and increased use of lineside loading • Work with FOCs and Freight End Users to deliver new network connections and necessary capacity and capability, or bring out of use infrastructure back into use
5	**Logistics and Mail Opportunity** O: Potential mail growth on main corridors and premium logistics developments	• Explore opportunities for business growth with existing and potential new customers

No	Key Challenges, Risks and Opportunities	What we plan to do
6	**Franchise changes / Crossrail** R: Refranchising of TOC in Route seeks greater capacity on shared lines R: Development of Crossrail will increase capacity demands on the most congested part of the Route	• Retain adequate capacity, capability and flexibility for existing and forecast freight • Review Impact on possession strategy from new flows • Review stabling plans for new rolling stock / change of locations
7	**Infrastructure enhancements / electrification** O: Greater capacity/opportunity following enhancement (eg. East West Rail on Western and LNW) R: Loss of Capacity following timetable change (eg. Crossrail on Western)	• East/West Rail provision for gauge and freight diversions • MML Electrification – risk from faster trains? • Support Route forums (RSPG etc) to influence scope and secure freight benefit following scheme delivery
8	**Construction projects / HS2** O: Opportunity for spoil and waste out and aggregate and other commodities in to support construction	• Work with DfT, HS2 Ltd, FOCs and End-customers to offer solutions to demands of major projects • Work with customers to manage the impact of major projects on their business (HS2) • Terminal / Yard developments ('pop-up' terminals / lineside loading potential) • Work with FOCs and Freight End Users to resolve any conflicts with existing freight facilities • Work with FOCs and Freight End Users to deliver new network connections and necessary capacity, or bring out of use infrastructure back into use
9	**SRFI Terminal Development** O: SRFI terminal development supports intermodal growth especially addressing demand for inland terminals C: Securing of sufficient capacity to support SRFI developments through planning and into use	• Work with Developers to understand SRFI proposals progression through planning • Offer NR support to proposals when adequate strategic fit and capacity • Work with System Operator to support funded early stage timetable work for SRFI developers • Reactivate and market Slough Strategic Freight Site
10	**End User-customer service** O: Closer working with FEU's enables greater understanding of customer priorities for future (e.g. Mendip Rail)	• Work with end-customers to strengthen service delivery and support • Work with end-customers to develop business growth and support modal shift to rail
11	**Review of redundant and unused assets** O: Following traffic changes in CP5 and structural change in energy market, opportunity exists to review size and organisation of non-passenger network	• Identify opportunities to reduce maintenance costs and remove unneeded infrastructure • Regularise the status of freight assets (actual v published) • Explore potential to transfer ownership of redundant lines / assets to secure better opportunities for redevelopment
12	**Yards and sidings infrastructure** R: Yard and Siding Infrastructure asset condition is critical to avoid derailment events and customer LTI's	• Working with Routes and customers to review asset condition on regular basis, • Working with Routes and customers to establish and benchmark walking route use and condition
13	**Timetable Review** O/R: Timetable Improvements to closely reflect capability of trains and capacity of network required on busier network	• Continuation of CP5 work to review path usage • Work with System Operator and customers to review opportunities to improve average speed origin-destination • Review with System Operator and customers suitability of current systems to capture network constraints and traction capability (Loads Book, Timing Loads, Lengths)
14	**Digital Railway** O: Successful introduction of Digital Railway offers potential for growth on busiest corridors	• Act as internal client on behalf of Freight to build sympathetic capability for freight traffic needs

CP6 Plan

Section	Key Themes	Strategy	Specifics	Owner	Timescale
Safety	Lost Time Incidents	Reduce LTIs through concentration on Network Rail yard infrastructure, connecting sidings and walking routes conditions.	• Published rolling programme of joint health and safety visits with customers (FOCs/TOCs) to agreed sites including Acton, Westbury, Southall and Brentford • Complete review of authorised walking routes/crew change locations per customer • Subject to funding, a programme of improvements will be specified and implemented • 'Go Look See' with customer within two weeks of any reportable customer LTI event on network infrastructure	FNPO Operations and Safety Manager/ SRFM	Initial Programme was published in 2018/19 and agreed then annually during CP6
	Freight Train derailments	Reduce freight train derailments through concentration on Network Rail yard and sidings infrastructure.	• Published rolling programme of joint health and safety visits with customers to agreed sites • End Customer Forum to be implemented to share issues of concern around connection points and maintenance either side of boundary point, in particular covering the quarries at Whatley and Merehead • Subject to funding, a programme of improvements will be specified and implemented	FNPO Operations and Safety Manager/ SRFM	Initial Programme was published in 2018/19 and agreed then annually during CP6
	FNPO SPADs	Reduce freight SPADS by collaborative working	• SPAD Forum to be implemented with FOCs to share learning and best practice	FNPO Operations and Safety Manager	Creation of Forum. Meeting regularity proposed quarterly

Section	Key Themes	Strategy	Specifics	Owner	Timescale
Performance	Right time departure performance at key hubs and terminals	Use Strategic Freight Corridors to focus delivery Measuring Right Time Departures from terminals at the start of the journey	• Local Working Groups (e.g. Mendip Rail, Acton Yard) • Use of Control Rooms and Visualisation at major sites (e.g. Merehead) • Re-brief Freight Strategy – 'Freight Delivery Matters' and linkage between RTD and FDM delivery	SRFM/ FNPO Performance Manager	Existing Working Groups to continue into CP6. Quarterly FNPO review of terminal engagement arrangements
	Measuring FDM and FDM-R	Focus on defined key routes: - Asset Performance - Asset Resilience - Effective contingency plans	• Target FDM-R Route target for end CP6 of 94.0% • Input to Route CP's for consistent application of freight contingency arrangements • FSDM input to incident recovery real-time to build consistency • Asset Reviews with Route Asset teams to share traffic forecasts and asset challenges with SRFM • Influence at RSPG to define future asset strategy in terms of renewals to support freight growth	SRFM/FNPO Performance Manager	Annual target setting during CP6. Periodic review of FDM-R delivery and key influencers
	Joint Freight Performance Improvement Strategies	Agreed joint strategy with each FOC including details of plans to reduce each delay area	• Complete plan annually with each FOC concentrating on primary delay categories • Agreed industry information share • Regular reviews against plan with each Route and FOC customer, in particular targeting A2F improvement at the Eastern end of the Western Route where the greatest congestion occurs.	FNPO Performance Manager/CRE	Joint Strategy Plan per Operator to be published annually during CP6 and reviewed quarterly
Capacity & Capability	Identifying future capacity and capability needs.	Bring together all freight capacity plans: • Route Studies • SFN • Customer specific	• All future project specifications to include a specific output level for freight services, reflecting the SFN specifications and forecast future traffic requirements. • Future Capability needs assessment to be undertaken – RA, Gauge, HAW – future plans for improvement to meet capacity requirements • Interactive maps for Gauge, RA to be created and maintained • Continued support for longer, heavier trains programme	Project Sponsor/SRFM SRFM/ FNPO Head of Strategic Capability/ FNPO Head of Network Management	Future capability programme definition by May 2019 and delivery per strategic route
	Review existing capability constraints	Undertake Capability Review	• Improved gauge and operational flexibility on key freight corridors • Robust gauge cleared diversionary routes • Transparent network capability per route for customers	SRFM/ FNPO Head of Strategic Capability/ FNPO Head of Network Management	Existing capability constraints review definition by May 2019 and delivery per strategic route

Section	Key Themes	Strategy	Specifics	Owner	Timescale
Capacity & Capability	Freight Train Average Speed	Undertake Average Speed Review	• Establish framework for average speed measurement and improvement • Work with Stakeholders to target specific flows and services, key target is the waste flow from London to Severn Beach • Annual plan in connection with annual timetable change	FNPO Head of Performance/ FNPO Head of Strategic Capability/ FNPO Head of Network Management	Measurement framework to be agreed by industry May 2019. Flows to be agreed for annual TT change
	Connections to new terminals and SRFIs	Facilitate connections to the network and associated capacity	• Work with FOC's, Freight End Users and Developers to identify potential new connections, including development of SRFI's • Information share of prospective sites via RSPG • Facilitate new network connections if required • Identify potential sites (new connections, bringing out of use infrastructure back into use and increased use of lineside loading) to facilitate growth, e.g. (Route TBC) for aggregates • Advice to System Operator of future sites and flows to understand timetable and capacity impact • Timetable studies for major terminal developments, e.g. SRFI's	SRFM/ FNPO Business Development Managers	Forward programme of FEU and Developer engagement to be agreed annually during CP6. Freight Developments Register to be held by SRFM for review at RSPG quarterly.
	Delivery of agreed CP6 freight enhancement programme	Continuation of Strategic Freight Network funding and industry governance group	• Promotion of potential freight projects and enhancement schemes • Prioritise funding to best meet demand and facilitate growth • Align SFN proposals with Route and National proposals to deliver a coherent forward strategy which best meets overall requirements	FNPO Head of Freight Development/ System Operator	Ongoing
	Consideration of incremental freight improvements in all schemes	Structured review process with Route planners and Sponsors	• Work with FOC's and System Operator to identify opportunities for incremental freight enhancements as part of the development of enhancement and renewals proposals, e.g. faster entrance/exit speeds into loops and through crossovers. • Defined and consistent engagement process to be agreed with Route Planning team and Sponsors	SRFM/ System Operator	Defined engagement process and inputs to be in place with Route Strategy by July 2019

Network Availability	Engineering plans that meet both FNPO customer and Route needs.	Regular and co-ordinated freight input into
		• Engineering Access Statements
		• Access Planning Requests
			• Engineering plans that are;
			  • Transparent
			  • co-ordinated
			  • consistent across Routes
			  • planned well in advance and
			  • take into consideration contingency arrangements for long distance services
				SRFM/ FNPO Capability and Planning Manager	Annual review of process/requirements between FNPO and Engineering Planning from May 2019 incorporating end to end Access process

Appendix G Supporting strategies

Supporting strategies developed by Western Route are shown in Annex 5. National strategies are included with the Network Rail delivery plan.

Appendix H List of supporting annexes

Annex 1: Change log

Annex 2: Long term scorecard

Annex 3: Efficiency Plan

Annex 4: ABP models

Annex 5: Route Short Form Route Strategies

Appendix I Glossary of terms

Term	Full description	Supporting explanation with route context
ABP	Activity Based Planning	An established accounting process used widely across organisations and introduced by Network Rail to develop maintenance resource and costs in CP6
Balise		A generic term for an asset (hardware) which receives and transmits a signal as part of a command or control process. Commonly used term as part of Western routes Automatic Train Protection (ATP) system
BCR	Benefit Cost Ratio	A key indicator, as a single figure, required in business case evaluation, to summarise the overall value for money of a proposal by calculating the income received over cost of implementation over the lifecycle of the proposal
C-DAS	Connected Driver Advisory System	A system which provides an indication in the Driving Cab advising speed in order to regulate train movement in conjunction with the signalling and route control process.
CAL	Curve Assisted Laser	Technology which assists in aligning track thus improving safety and quality of trackwork
CAPEX	Capital Expenditure	An accounting term used to classify money spent on acquiring or improving fixed assets which is then depreciated in the accounts and non-consumable. Renewals and enhancements are treated as capex in the CP6 submission
CCTV	Closed Circuit Television	Television systems used primarily at stations are part of the SISS assets
CIS	Customer Information System	Display screens and voice announcements relayed from the signalling system to inform passengers
Control Period		The five year timespans used by Network Rail and ORR for financial and regulatory planning purposes as part of the Network Licence under which Network Rail owns and operates the national rail network.
COO	Chief Operating Officer	Organisational lead for route operation
CP5	Control Period 5	April 2014 - March 2019: the current Control Period
CP6	Control Period 6	April 2019 - March 2024: the next Control Period.
CRI	Composite Reliability Index	An indicator agreed between Network Rail and ORR which summarises the contribution of asset reliability to the safety and performance of the railway.
DCO	Development Consent Order	The legal means of obtaining permission for developments categorised as Nationally Significant Infrastructure Projects (NSIP)
DfT	Department for Transport	The government department accountable for rail transport in Great Britain
Digital Railway		A generic term for a Cross Industry Programme addressing improvement in capacity of the UK rail network by introducing for example improvements in digital command control and signalling systems and intelligent infrastructure and trains thus creating a more agile and dynamic network response to support supply chain and passenger flows on the national rail network.
DOO	Driver Only Operation	A method of train operation where the driver is responsible for the operation of the train doors
DRP	Dynamic Rail Profiling	Technology which supports the checking and alignment of rail profile – thus improving safety and quality in track work.

DRAM	Director, Route Asset Management	Organisational lead in the route for safety of the railway system and staff and the asset management of all subsystems.
DRHSQE	Director, Route Health, Safety Quality & Environment	Organisational lead for health, safety, quality and environment activities on the route.
DRS	Director Route Sponsorship	Organisational lead for sponsorship of enhancement programmes
DTS	Dynamic Track Stabilisation	Machinery and techniques to consolidate track support and allow reopening of lines with no restriction of speed
Elizabeth line		The new railway service linking Reading and Heathrow in the west to Shenfield and Abbey Wood in the east using a tunnel section to route main line trains through central London. The service is operated by MTR Crossrail under a concession awarded by Transport for London (TfL) and in part uses assets owned and managed by Network Rail, as well as a central operating section built and managed by Crossrail Ltd
ETCS	European Train Control System	The signalling and control component of the European Rail Traffic Management System (ERTMS) developed to replace existing incompatible individual systems and integrate rail networks across Europe. A key component of Digital Railway
FDM	Freight Delivery Metric	Performance measure for freight operating companies
FDM-R	Freight Delivery Metric – Route	As FDM but where responsibility lies with the route
FDSM	Freight Delivery Service Manager	Real-time organisational lead for freight service management
FEU	Freight End User	The customers of the freight operating companies
FNPO	Freight and National Passenger Operators	All freight and train operators with long distance services transiting a number of routes who are therefore not allocated to one route for accounting and commercial management purposes but are managed through a central FNPO team, such as CrossCountry, DB Cargo and Freightliner
FOC	Freight Operating Company	A freight company with access rights to operate train services on Network Rail infrastructure
FPM	Financial Performance Measure	A measure of Network Rail's financial performance.
FTN	Fixed Telephone Network	The assets which transmit data and voice over physical cables (as opposed to wireless transmission)
FWI	Fatality Weighted Injury	An indicator commonly used in safety assessments and as part of the Common Safety Method to assess the level of safety.
GRIP	Governance for Railway Investment Projects	The management and control process developed by Network Rail for developing and delivering projects on the rail network.
GW-ATP	Great Western Automatic Train Protection	System which supervises the speed of high speed trains operating between Bristol and London
GWR	Great Western Railway	Great Western Railway – the principal Train Operating Company on Western operating under a direct award from DfT to April 2020.
HABD	Hot Axle Box Detector	Assets and supporting systems which alert Route Control to faults with vehicle axle support (normally

		bearings) allowing intervention before the vehicle fails
HAL	Heathrow Airport Limited	The Infrastructure owner for the railway from Airport Junction on the Great Western Main Line to Heathrow Airport.
HEx	Heathrow Express Limited	The non-franchised Train Operating Company operating between London Paddington and Heathrow Airport terminals.
HoCRM	Head of Customer Relationship Management	Organisational lead for both train performance and the route's commercial relationship with our customers
HoMD	Head of Maintenance Delivery	Organisational lead for maintenance delivery within the route.
HoP	Head of Performance	Organisational lead for delivering train performance to customer requirements and for initiatives which improve performance
HoRC	Head of Route Communications	Organisational lead for internal and external communications, public affairs and community relations
HS2	High Speed 2	A generic term used to describe all activity connected with High Speed Two Limited, the executive non-departmental body sponsored by Department of Transport and responsible for developing and promoting the UKs new high speed rail network. Western route main activity is at Old Oak Common.
HSRD	High Speed Rail Director	Network Rail's organisational lead for the interface with HS2
IP	Investment Projects	Network Rail organisation responsible for implementing projects as remitted by Sponsors – to date the principal delivery partner for Network Rail investment.
ISO14001		The international standard on Environmental Management adopted by Network Rail as part of good business practice.
ISO55000		The international standard on Asset Management adopted by Network Rail as good business practice.
LA	Local authority	Local county, borough, district and unitary councils
LEP	Local economic partnership	Partnership groups of local authorities and business groups who work to foster economic development in their area
LMD	Light Maintenance Depot	A depot licenced and regulated by ORR to provide routine maintenance services to passenger and other trains
LNW	London North Western route	Network Rail's route which covers lines from Euston to the West Midlands and the North West, including the West Coast Mainline.
LTI	Lost Time Incidents	One of a set of key safety metrics used to improve and monitor safety management
M&E	Mechanical & Electrical	Term used to commonly describe building services, heating, lighting etc.
MDU	Maintenance Delivery Unit	The main resource centre for Network Rail route maintenance – Western route has four at Reading, Swindon, Bristol and Plymouth.
MetroWest		A project promoted by four unitary authorities in Bristol, Somerset and Gloucester with Government support to improve rail transport services across Bristol and surrounding areas with a main aim of half-hourly services through central Bristol.
MIR	Mechanically Independent	A specific safety related requirement in OLE which limits the impact of failure of cables. It is

	Registration	specifically required in station areas to improve safety to passengers and rail staff I the event of dewirement.
MSP4NR	Managing Successful Projects for Network Rail	The process adopted by Network Rail for governance of all change projects
MTR Crossrail		The wholly owned subsidiary of MTR Corporation to whom TfL awarded the concession for operating the Elizabeth line
NR	Network Rail	Network Rail: the owner and operator of the railway infrastructure in England, Wales and Scotland as defined in the Network Licence
NRPS	National Rail Passenger Survey	Significant passenger experience survey carried out every six months by Transport Focus
OLE	Overhead Line Equipment	The system of assets fitted above track which provides electrical power to the electric trains. The supply on OLE is 25 thousand volts and the transfer is between the conductor wire and the train pantograph
OPEX	Operating Expenditure	An accounting term used to classify money spent on items necessary for running a system and business. This is not depreciated as it is deemed consumable within a financial year. Maintenance and Route Control are opex.
ORR	Office of Rail and Road	The economic and safety regulator for Network Rail
OTM	On Track Machine	Equipment used for inspection, maintenance and renewal infrastructure work with the ability to access track – often fitted with rail wheels
PA	Public Address	System for making announcements to passengers at stations.
PAVA	Public Address and Voice Alarm	PA system incorporating a voice alarm, such as a station “help point”.
PPM	Public Performance Measure	Current industry standard measurement of performance combining punctuality and reliability into one figure. It shows the percentage of trains which arrive at their terminating station within 5 minutes (London, South east and regional services) or 10 minutes for long distance
PSP	Principal Strategic Planner	The route-based lead for the System Operator
PSP	Principal Supply Point	Main electricity supply to lineside equipment
RAM	Route Asset Managers	The post responsible for the safe and reliable management of particular rail sub-systems such as Track RAM, Signalling RAM, Buildings RAM. In CP6 the route owners of the renewals budgets and remits to deliverers.
RBDD	Route Business Development Director	Organisational lead for developing third-party investment to the route
RDG	Rail Delivery Group	Organisation which brings together Network Rail and the train operators into a single team to deliver a better railway
RFD	Route Finance Director	Organisational lead for the management of the route’s finances
ROSCO	Rolling Stock Leasing Company	The companies regulated by ORR and created for the purpose of leasing coaches, locomotives and freight vehicles to train and freight operating companies for the services they wish to operate. Many also provide maintenance and overhaul support to rolling stock

RPD(C)	Route Programme Director (Change)	Organisational lead for change programmes on the route
Route Supervisory Board		An independently chaired Board formed in 2017 of managing directors of Western route, GWR and HEx as well as Transport Focus, to bring track and train operations and long term planning closer together and minimise impacts on rail users.
RSSB	Rail Safety and Standards Board	The independent not-for-profit company established to support members and stakeholders to deliver a safer, more efficient and sustainable rail system. Network Rail is a member.
SoAR	Sale of Access Rights	The railway process, managed through a network wide governance panel, through which the negotiation and sale of train paths and access to the network is agreed for inclusion in Track Access Contracts.
SCADA	Supervisory Control and Data Acquisition	An established acronym for any system which gathers data for the purposes of system control and management. In the route context the term is relevant to the Electrical Control Room operation and the OLE system.
SCO	Supply Chain Operations	The organisation in Network Rail which provides engineering trains (including ballast and rail delivery trains), and on-track machines
SFN	Strategic Freight Network	The trunk freight network across Great Britain.
SISS	Station Information Security System	The portfolio of station information and security assets, including CCTV, CIS and PA systems.
SO	System Operator	The organisation within Network Rail responsible for the creation, planning and allocation of capacity on the network from current timetable through future control periods considering the needs of multiple operators, funders and routes.
SP&C	Signalling, Power and Control	A team within Investment Projects with expertise in delivering projects in signalling, power and control applications – the main deliverer of signalling mid-life refurbishment schemes
SPAD	Signal Passed at Danger	A safety incident where a train does not respond as required to the signal aspect. All SPADs are investigated to understand cause as part of improving safety. SPAD risk and history are important to informing decisions in operational and asset management.
SRFI	Strategic Rail Freight Initiative	An improvement initiative on the strategic freight network
SRFM	Senior Route Freight Manager	The organisational lead for freight services on each route, working for FNPO but embedded within the route leadership team
STE	Safety, Technical and Engineering	Part of Network Rail's central service as Technical Authority
STEM	Science, Technology Engineering and Mathematics	An initiative supported by Network Rail to encourage school pupil interest in Science, Technology Engineering and Mathematics and raise standards
SWOT	Strengths, Weaknesses, Opportunities and Threats	A form of analysis or assessment of qualitative data
TOC	Train Operating Company	A company awarded a franchise by DfT to run passenger train services under a Track Access Contract
Track Category		A classification of track governed by legislation and based on speed required, tonnage and type of

		traffic. The output is an index which governs the type of track installed, the maintenance regime and the charges applied to train operators for use of the track.
TWA	Transport and Works Act	The Transport and Works Act 1992 is the usual means through which an Order is made authorising a new railway or tramway scheme in England and Wales. Other schemes can be authorised under the Act.
Transport Focus		The independent passenger watchdog set up by government to represent the interests of rail passengers in Britain, bus and tram passengers (outside of London) and passengers on scheduled domestic coach services in England.
TVSC	Thames Valley Signalling Centre	The main signalling centre for the route based in Didcot. Resignalling of the electrified routes in CP5 included transfer of signalling control from a number of locations to this centre, which also accommodates the Electrical Control Room Operations.
UTC	University Technical College	Schools for 14-19year olds which combine academic education with technical and practical applications. Each UTC is linked with a sponsor university and employer with a special focus on STEM subjects. Network Rail supports UTCs.
WD	Works Delivery	Route organisation for delivery of smaller infrastructure renewals
WRLTH	Western Rail Link To Heathrow	An unfunded enhancement option to connect Heathrow Airport through Terminal 5 to the Great Western Main line west of Heathrow allowing passengers to reach Heathrow terminals without going to London Paddington
XC	Cross Country	One of the national passenger train operators and a key customer of Western route on north - south services in particular

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